Effects of Higher Spousal Earnings on Women's Social Empowerment in Ghana

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Abstract

Existing research shows that access to employment and earnings appears to have ambiguous effects on women's bargaining power and subsequent empowerment. This study explores the effect of higher relative earnings by women on the likelihood of social empowerment and examines to what extent the relationship is moderated by husbands' education levels. 2008 and 2014 rounds of the Ghana Demographic and Health Survey are used for the analyses and a Probit model with interaction effects is employed as a base model. In order to account for potential selectivity bias, a propensity matching technique is also employed. Findings indicate a strong positive relationship between wives' higher earnings in households and a higher probability of social empowerment. The relationship appears to be moderated, to a significant extent, by partners' education- the presence of educated husbands widens the social empowerment gap between women who earn more than their husbands and women who do not.

Keywords: social empowerment, reproductive health, earnings, propensity score matching, Ghana

Introduction

Improvement in gender equality and the empowerment of women and girls is integral to achieving the Sustainable Development Goals (SDGs). Empowerment refers generally to the enhancement of freedom of choice and action and is particularly important because of its implications for poverty reduction and household welfare. Empowerment of individuals contributes to poverty reduction through the removal of barriers that would otherwise prevent them from taking decisions to better their level of living. Although women can be empowered in many ways; socially, economically, politically and legally, the present study focuses on the social construct of empowerment, as it relates to the freedom and ability to wield significant control over one's own reproductive health (Bandiera et al., 2017).

Sexual and reproductive health and associated rights are crucial for empowering women and facilitating gender equality. Women's ability to exercise their sexual and reproductive rights to make choices about their sexual and reproductive life, and about whether and when to have children, is a central component of gender equality. In a number of developing countries, progress with women's empowerment relating to their capacity for reproductive decision-making is slow (Doepke et al., 2012), and studies demonstrate an imbalance in decision-making about the use of contraceptives in a number of developing country settings (Speizer et al., 2005). Where couples disagree about the use of family planning techniques, the male partner's opinion often overrules his female partner, even though females are more closely linked with the outcomes of these decisions (Speizer, 1999; Bankole and Singh, 1998; Becker, 1999).

Access to employment and earnings have been identified as one of the pathways to increasing women's empowerment (Allendorf, 2007; Anderson and Eswaran, 2009). In Ghana, employment and earnings disparities continue to persist, with limited progress on gender equality and women's social empowerment. According to the 2015 Ghana Labour Report, a slightly higher proportion of men (71.4%) are employed, compared to women (64.7%). Majority of Ghanaian workers (approximately 90%) are however employed in the informal sector, with males constituting 45.1% and females, 54.9%. The informal economy operates on a small-scale basis, with low levels of organization. It is characterized by low skill, low productivity and subsequently, low contribution per head (Abraham, et al., 2017). On average, currently employed persons in the country earn on average of GH¢898 with males (GH¢1,011) earning about 30% higher compensations than females (GH¢715). These differences in earnings may have implications for women's empowerment status and their autonomy over decisions relating to their reproductive health. Indeed, a major indicator of progress of empowerment may be women's freedoms to make decisions regarding their own sexual reproductive health. In Ghana, there remains some progress to be made in this regard.

The targets entrenched in the SDGs, particularly in Goals 3 and 5, indicate behavioural linkages among women's reproductive health, human capital, labor force participation, productivity, and poverty. The present study examines the factors that inhibit and encourage women's social empowerment with respect to their reproductive health, with particular focus on the role of earnings differentials between couples. The 2008 and 2014 rounds of the Ghana Demographic and Health surveys are used for the analyses. Although probit regressions are employed as the base model specification, propensity score matching techniques are also used to account for potential self-selection bias with the study. There is a concern that women may self-select into very high-paying jobs, thereby sorting themselves into groups which may differ on the underlying factors which

motivated their decision. For example, more motivated women may "self-select" to higher paying jobs; and this higher motivation and self-confidence, rather than their higher relative earnings, could actually account for their higher social empowerment. To remove the threat of validity therefore, statistical techniques such as instrumental variables, structural equation modelling, and propensity scores are available to confront some of the biases characteristic of observational studies of women's social empowerment. The present study employs the propensity matching technique to deal with this. The research objectives are summarized below:

1) Are women more likely to be socially empowered when they have relatively higher earnings than their partners?
    a) Given social and cultural expectations of women's reproductive responsibilities, do these effects differ between women above 40 years of age, who have likely completed their fertility, and women below 40 years of age, who are less likely to have completed their fertility?
2) Are these effects (if any) moderated by women's partners' education level?

Despite the relevance of these relationships, no study, to the best of the author's knowledge, has examined the effects of differential earnings between couples, on women's level of social empowerment in Ghana. Similarly, no studies have examined the moderating influence of husband's education level. A second contribution of the present research is through the use of nationally-representative data in the examination of these relationships in the African context. Studies that have examined effects of income and employment on empowerment measures have generally not been nationally-representative (Bates et al., 2007; Lee-Rife, 2010). Of the studies that have employed nationally-representative data, these have largely focused on outcomes in South Asia (Bhatt, 1989; Dyson and Moore, 1983; Vlassoff, 1982).

The remainder of the article is structured as follows: Section II briefly discusses the literature on the measurement of empowerment while Section III describes the data and presents some relevant summary statistics. Section IV discusses the empirical methodology, while Section V presents results from empirical specifications and discusses these. Section VI concludes with a number of policy recommendations derived from the study.

Earnings and Women's Empowerment

There has been a lot of work done in the area of women's empowerment involving different measures and conceptualizations of empowerment, factors that determine women's empowerment, in addition to the effects of empowerment on a number of social and economic outcomes. This literature review focuses on the determinants of women's empowerment, with particular emphasis on the contribution of income and/or earnings.

According to the intra-household bargaining literature, access to economic resources contributes in a significant way to women's degree of empowerment within the household (Browning and Chiappori, 1998, Duflo, 2003, Blumberg, 2005). Women tend to have a higher bargaining power with higher incomes, assets and educational achievements, which might have implications for their decision-making authority (Agarwal, 2001). Empowerment has however been described more as a 'process', than a state of being, and the ever-evolving nature of empowerment presents some challenges to its measurement. Proxies such as employment and education which have therefore traditionally been used as indicators for women's levels of empowerment face some criticism (Ackerly, 1995; Kishor, 2000; Woldemicael 2009) as they are more suggestive of a state of being, than an ever-changing process. An increasing body of researchers have therefore argued that these

proxies for empowerment may be misleading. For instance, it would be difficult to perceive a woman who works, earns an income but still shoulders an overwhelming share of childcare and domestic responsibilities as being empowered. In response, recent literature highlights new strategies to capture the process of empowerment through measures of decision-making and control/ choice.

Recent literature tends to relegate employment status and earning capacity as controls in regression models of empowerment (Blumberg, 2005). The rationale here is that employment and earnings enhance women's economic and bargaining power within the household empowerment (Ashraf, Karlan, & Yin, 2010; Majlesi, 2016) but are not adequate measures of the process of empowerment. It has been suggested that attention be paid less to income holdings of women, and instead to the enhanced *control* over household resources that this higher income brings. For example, Kabeer (1997) found that access to earnings did not improve the bargaining power of Bangladesh women in their households. Another study on the effects of micro-finance in India found no effects on female decision-making power in the household (Banerjee, Duflo, Glennerster, & Kinnan, 2015). Indeed, women's access to income may not translate to increased bargaining power if their earnings are not on a scale large enough to be vital to the household. This may occur in the situation where the husband earns more than his wife and therefore provides sufficiently for the household, even in the absence of women's earnings (Kibria, 1995; Endeley 2001; Malhotra and Mather 1997). In situations where women earn relatively more than their husbands therefore, the conclusions may be different. A woman who earns more than her husband may be expected to contribute in more significant ways to the household, be significantly involved in household decision-making processes and therefore be more socially empowered. The present paper focuses on an empirical examination of this theoretical concept.

The present study focuses on social empowerment in the Ghanaian context, proxied by women's ability to ask their partners to use condoms during sexual activity. An important feature of this empowerment measure is its context specificity (Malhotra, 2005). In Ghana, there is evidence that suggests that family planning services and contraceptive use can cause tensions in gender relations within the household. In the Ghanaian society, where payment of bride-wealth signifies a woman's requirement to bear children, there are deeply ingrained expectations about women's reproductive obligations (Bawah et al., 1999). According to Malhotra (2005), underlying structures of gender inequality and low empowerment are often invisible to the actors in a particular social context; leading to acceptances of these experiences and situations as "natural" and, as such, unchangeable. Similar to other researchers who have employed context-specific measures of empowerment in their studies (e.g. Lee-Rife, 2010; Upadhyay and Hindin, 2005) to reflect locally-defined dimensions of women's status, this research also employs a contextually-specific social empowerment measure.

Indeed, according to Harper et al. (2014), a woman's ability to exercise control over sexual and reproductive choices is a good measure of empowerment. It is important to note that the present study focuses on women's *attitudes* and *behaviours* surrounding their reproductive health. The ability of a woman to insist that her husband uses contraceptives during sexual activity may be perceived as an indicator of changing social norms, as opposed to the actual *use* of contraceptives as an indicator of empowerment. This is because low contraceptive use may be a consequence of limited access to contraceptives due to lower supply, and therefore not necessarily indicative of lower empowerment. Conversely, even where contraceptives use is high, this may be less indicative of higher empowerment, and instead due to an increased availability of contraceptives.

Data

The study uses data from the 2008 and 2014 rounds of the Ghana Demographic and Health Survey (GDHS) and is restricted to the sample of married women. The GDHS is a nationally representative survey that includes information on women between 15 and 49 years of age, with additional information on socioeconomic and demographic characteristics. Individual and household data are collected from all ten (10) regions of the country. Summary statistics of the variables included in the empirical analysis are reported in Table 1. Descriptive statistics are disaggregated by women who earn more than their spouses and women who do not (i.e. earn less or the same as their husbands). Survey weights are employed in the construction of these descriptive variables.

About 73% of the married women in the sample report that they are able to ask their partners to use condoms during sexual activity. The proportion appears to have declined from 77% in 2008 to 71% in 2014. This is the proxy for social empowerment used in this study. Married women who are able to ask their partners to use protection during sexual activity are perceived to be more highly empowered than women who report that they cannot. As mentioned above, this is because of the cultural and social expectations of the reproductive responsibility of women in this setting. 10% of women report that they earn more than their husbands.

The average age of women in the sample is 34 years of age, with an average education of 6.5 years. Education levels are higher among men, with an average of about 8.7 years, which is not surprising, given that education attainment rates are higher among men, compared to women, in Ghana. It is interesting to note, also, that women who earn relatively more income appear to have more educated partners than women who are not do not earn more income, relative to their partners. Although the difference is very small, it is highly significant. On average, about 83% of male partners have had at least a primary school education.

[Table 1 here]

The age at first marriage among women in the sample in both rounds is about 19.5 years. This appears to be increasing over time and rose from 19 years in 2008 to 19.6 years by 2014. There are however no statistically significant differences in the age at marriage between women who earn more than their husbands and women who do not. 49% of the sample resides in urban areas, with a significantly higher proportion of women who earn more than their husbands living in these urban centres. While 48% of women who do not earn more than their husbands reside in urban areas, 57% of women who earn more than their spouses reside in urban areas.

Women have an average of 3 children, with no significant differences between women of higher- and lower-relative earnings. On average, men are about 7 years older than their partners, with this spousal age difference larger among women who do not earn more than their husbands. A dominant proportion (80%) of women belong to the Christian religion and there are no significant differences in religious affiliation between women who earn more than their partners, and women who do not.

Regional controls are also included in the model- There are significantly different concentrations of women who earn more and women who do not in regions such as the Greater Accra region, Eastern, Brong Ahafo, Northern and Upper East regions. While a significantly larger concentration of relatively higher-earning women is found in the Greater Accra and Eastern regions; a larger concentration of women who do not earn more than their husbands is found in the Brong Ahafo, Northern and Upper East regions, indicating some significant variations

in relative spousal earnings by north/south regions. Other regions such as Western, Central, Volta, Ashanti and Upper West do not have statistically significant differences in the concentration of women. This information is summarized in Figure 1. Bars below the origin indicate regions where a higher proportion of women earn higher wages than their husbands, while bars above the origin indicate regions where a higher proportion of women do *not* earn more than their husbands. Results indicate that women who earn more than their husbands are concentrated in the southern parts of the country while women who do not earn more than their partners are concentrated in the northern parts of the country. Significance stars indicate which regions display statistical differences, in addition to significance level of these differences.

Figure 2 displays relative earnings, by occupational status of women. Women are classified into the following occupations- Professional/ Technical/ Managerial; Clerical; Sales; Agriculture (self-employed); Agriculture (employee); Services; Skilled manual labour and Unskilled manual labour. A significantly higher proportion of higher earnings women are in the Professional/Technical/Managerial occupation category, as well as in Sales occupations, with the highest proportion of women who earn more than their husbands found in sales occupations. A significantly higher portion of women who do *not* earn less than their husbands are observed to be self-employed agricultural workers. These results, even at this preliminary stage, have important implications for policy-making.

Methodology

The probit model is employed as the base model in these analyses. The model specifications are described below:

Model 1: $$S_{Emp_i} = \alpha_0 + \alpha_1 HigherEarnings_i + \alpha_2 X_i + \varepsilon_i$$

Where S_{Emp_i} is a dummy variable for the ith woman's social empowerment that takes on a value of 1 if a woman reports that she is able to ask her partner to use protection during sexual activity, and 0 if she reports than she cannot. $HigherEarnings_i$ is a dummy variable that takes on a value of 1 if women report that they earn higher incomes than their husbands, and 0 if they report that they earn the same, or lower incomes. X_i includes the full set of control variables in the model- the age of women, including a quadratic term; years of education of women and their husbands; the age at marriage and its quadratic term, a dummy variable for urban locality; household wealth scores generated from household ownership of assets, constructed using principal component analysis; the number of living children; spousal age differences with positive and larger differences observed when husbands are much older than wives. Geographical controls are included to account for regional variations- the northern region is assigned as the base category. ε_i represents the error term.

The sample is then disaggregated by women who have completed their fertility, and those who may have not. The regression model above is then run separately for women above forty years of age who are likely to have completed their fertility, and women younger than forty years, who may not have completed their fertility.

Model 2:

$$S_{Emp_i} = \alpha_0 + \alpha_1 HigherEarnings_i + \alpha_3 HusbandEduc + \alpha_4 Earning * Education + \alpha_2 X_i + \varepsilon_i$$

Model 2 is an improvement over Model 1 and includes interactions between wives' higher earnings and husband's educational level. $HusbandEduc$ is a dummy variable that takes on a value of 1 if husbands have completed at least a primary school education; it takes on a value of 0 for husbands who do not have any education at all. $Earning * Education$ is an interaction term of women who earn higher incomes than their partners and partners who have attained at least a primary level of education. Again, the sample is disaggregated and run separately for women of competed and uncompleted fertility.

There is however the potential for simultaneity and confounding effects in the use of the probit model for an examination of the effect of higher relative earnings on women's social empowerment. This implies that observed effects on the dependent variable may be due to the influence of other covariates. Women may self-select into very high-paying jobs, thereby sorting themselves into groups which may differ on the underlying factors which motivated their decision. For example, more motivated women may "self-select" to higher paying jobs; and this higher motivation and self-confidence, rather than their higher relative earnings, could actually account for their higher social empowerment. A limitation of the probit model is that it is unable to detect and ensure suitable comparability in terms of distribution overlap on observed social, economic and demographic characteristics. The PSM technique is able to adjust covariates between treatment and control groups and ensure 'balance' between both groups so that observed outcomes are more likely to be due to relative earnings. Propensity scores determine each woman's probability of being assigned to the treatment (i.e. receiving higher relative wages, compared to her husband), given the set of observed covariates. Matching on these scores then ensures that women who are equally likely to be assigned to the treatment are compared with each other. In the next step of the analysis, the Average Treatment Effects on the Treated (ATT) is calculated, to determine the average effects of women's higher relative earnings on their social empowerment. Although the propensity score model is run as an improvement over the probit regression specifications, an important limitation of the PSM approach is that unobserved characteristics cannot be accounted for in the PSM model.

A stratification matching technique is employed, where observations are assigned into strata based on the propensity score, and the effect of the treatment is examined within strata. Balancing tests from the propensity score matching are presented in table 2, and show that balance conditions are satisfied. In addition to t-test statistics, a % bias of less than 10 is traditionally accepted as an indication of balance between characteristics in the treatment and control groups. Results from both the probit and PSM specifications are reported in the next section.

[Table 2 here]

Results and Discussion

This section summarizes results from probit and PSM model specifications. Results are presented first for the probit model, and then for the propensity score matching specification. Table 3 summarizes the output for the various specifications under the Probit model. The table is divided into two noticeable columns- one set includes specifications with interaction effects, while the other set does not. In each set, in addition to the full sample, results are also disaggregated by women who may or may not have completed their fertility.

In the first set of regressions, without interaction effects, women who earn more than their partners are more likely to be socially empowered, compared to women who do not. As expected, the coefficients are smaller for

women below 40 years of age, who may not have completed their fertility. With the inclusion of interaction effects, women who earn more and are married to educated men are more likely to be socially empowered than women who earn more but are married to uneducated men. Women who earn more and are married to more educated men are also more likely to be more socially empowered than women who are married to educated men, but do not earn more than their partners. Therefore, results indicate that although who earn relatively higher incomes than their husbands are more empowered, the interaction with educated husbands appears to widen the social empowerment gap between women who earn more than their husbands and women who do not. An explanation for this finding may be that women who earn more than their husbands may maintain a higher level of bargaining power within their households (compared to women who do not). This situation, coupled with husbands' higher education and subsequently lower conformity to societal and/or cultural expectations, may allow a woman to freely express her feelings and her husband to be more accommodating. It is important to note, therefore, that although focus has been on the education of women and girls in many developing country settings, men's higher education in some cases appear to be complementary to desired female empowerment outcomes. Interestingly, among women who have not completed their fertility (i.e. below 40 years of age), these coefficients are even stronger.

There were no significant relationships between the number of children and empowerment, consistent with other literature (Adak and Bharati, 2011; Jejeebhoy, 1999; Yabiku et al., 2010). In theory, however, the presence of children might shift bargaining power in either direction- increasing the wife's bargaining power if she has disproportionate influence over the children's' emotional well-being or increasing the husband's bargaining power position if he has disproportionate influence over their material welfare (Friedberg and Webb, 2006). As expected, age at first marriage is positively correlated with social empowerment in the study- women who marry later are more likely to be socially empowered. This relationship is however non-linear. While women who marry later may be more highly empowerment because in most cases these women may have been furthering their education (Solanke, 2015), beyond a certain point, they may be past the socially-acceptable marriageable age, with negative implications for their empowerment. It is interesting to note that these results are particularly relevant for women who have not completed their fertility. Women may have less bargaining power if their husbands are significantly older (Caldwell, Reddy and Caldwell, 1983; Kantor, 2003). In the present study, again, this is particularly true of women who are yet to complete their fertility.

[Table 3 here]

As expected, education is very highly correlated with a woman's level of social empowerment (Musonera and Almas, 2016; Rahman and Rao, 2004). Women with higher education may be better exposed to new ideas and alternative behaviours and gender norms and roles. Women with higher education may be less likely to accept wife beating and other forms of violence and may be more likely to believe that it is a woman's right to refuse sex with her husband, for example. With higher education, women may understand their rights better, take more appropriate household decisions and have some degree of bargaining power within the household. Higher education of husbands is also highly correlated with women's social empowerment. A reason for this may be that an educated man may not be as obligated to social and cultural expectations, compared to a less educated man thereby allowing his wife to express herself freely.

Compared to women of traditional religion, Christians and Muslims appear to be more socially empowered. An explanation for this may be that in traditional African societies, a patriarchal system dominates and often includes certain practices that could be detrimental for women e.g. only usufruct rights to land, unfavourable inheritance systems, etc (Paulme, 1960; Adhiambo-Oduol, 2001), which may have negative implications for women's empowerment. The finding of a strong correlation between Christianity and empowerment is also grounded in the literature- the spreading of Christianity relies greatly on the written word - the Bible, unlike the traditional religion (Njoh and Akiwumi, 2012). This literary requirement for the comprehensive practice of the Christian religion is closely related with education and subsequently, the empowerment of women.

Although effects are minimal, household wealth is also positively correlated with women's probability of high social empowerment (Sado et al., 2014). It is important to note however that other studies have found results to the contrary (Mahmud, 2012), where women from wealthier households are less likely to be empowered, if their household contributions are not significant enough to give a 'voice' to the decision-making processes.

Using women who are self-employed in the agricultural sector as the base group, women in professional, sales and services sector appear to have a higher likelihood of social empowerment. Surprisingly, women employed in unskilled manual labour are also more likely to be empowered, compared to self-employed agricultural workers. If empowerment is generally understood to be a process of bestowing power and giving ability to individuals who may be deficient, then occupational choices can have important implications for empowerment (Hammell, 2016).

Regional variations are also observed in social empowerment, controlling for the host of other factors. Compared to women from the northern region, women from Western and Ashanti regions appear to have a lower likelihood of being empowered; while women from the Central, Greater Accra, Eastern, Brong Ahafo, Upper East and Upper West regions appear to have a higher likelihood of being socially empowered. Finally, women in 2008 appear to have a higher likelihood of being empowered, compared to women in 2014.

The results presented above are likely to be plagued by selection bias, as discussed in the methodology section above. The propensity score matching approach is therefore employed to account for potential bias in the estimates. Results are presented in table 4 and indicate a consistent positive relationship between higher relative earnings and women's social empowerment in Ghana.

[Table 4 here]

Results from the PSM technique on social empowerment show a positive and statistically significant coefficient for the average treatment effect on the treated (ATT), indicating that women who earn more than their husbands are more likely to be socially empowered, compared to "similar" women who do not earn more than their husbands. The magnitudes of the effects are however smaller under the PSM approach, compared to the probit regression models, indicating the presence of some selection bias in the latter.

Conclusion and Policy Recommendations

Improvements in the empowerment of women is critical to progress in achieving the sustainable development goals. Understanding contextual women's experience of empowerment and its determinants is vital to ensuring gender equity and empowering women. Although the literature has identified access to employment and

incomes as vital to women's empowerment, it has been emphasized that these are unlikely to have significant effects unless they translate into a larger control of household resources, and therefore substantial bargaining power. To test this construct, the present study examines the situation where women in Ghana report earning higher incomes than their husbands. The study examines and finds consistent evidence of higher social empowerment in reproductive health behaviours, among women who have relatively higher earnings. Interaction effects showed that this relationship is moderated to a large extent by husband's education levels. Given the contextual measure of the social empowerment proxy (i.e. ability to ask a partner to use protection), the analyses were disaggregated by women who are likely to have completed their fertility, and women who are less likely. Results indicated stronger effects who women who have completed their fertility, although when interactions of partner education were included, women who had *not* completed their fertility demonstrated larger likelihoods of social empowerment, compared to similar women with partners with no education.

In Ghana, significant differences are present in earnings by men and women, and opportunities available for employment. Women are typically largely represented in the low-productivity, informal economy and are more likely to be employed in low-skill occupations. This affects their level of compensation and their relative contribution to their respective households. There should be efforts to increase the level of productivity in the informal economy. Additionally, continued emphasis should be placed on the education of women. Women should be particularly encouraged to enter into areas that are often regarded as the preserve of men. Women, for instance, are poorly represented in high-skill, high-paying occupations in Ghana. An example is the country's mining sector. This is a challenge that has been acknowledged by the government, and its Gender Mainstreaming in the Energy Sector Project is aimed at increasing female participation in Ghana's Energy Sector. Led by the Local Content Unit in the Petroleum Directorate of the Ministry of Energy, the first phase of the project focuses on a sensitization and career guidance programme in the Petroleum and Power sector at Senior High Schools across the country. The sensitization programme takes the form of forums across selected Senior High Schools (SHS), preferably female SHS in the 10 Regions of the country. This is aimed at whipping up enthusiasm among female students and encouraging them to choose courses relevant to the industry at the tertiary level. The current free Senior High School (SHS) initiative of the current government is also well-aligned with the motive of increasing education of girls in the country. Continued focus on education and skills-training would be critical to raising women's employment potential, increasing their earnings and lifting them out of poverty.

From a policy perspective therefore, empowerment in reproductive health behaviours is a factor of a number of variables including education (hers and her partner's), a women's age, her age at first marriage, occupation, religion and her region of location. It would be interesting to explore further, the nature of differential earnings in Ghana, paying attention to the noted north-south divide.

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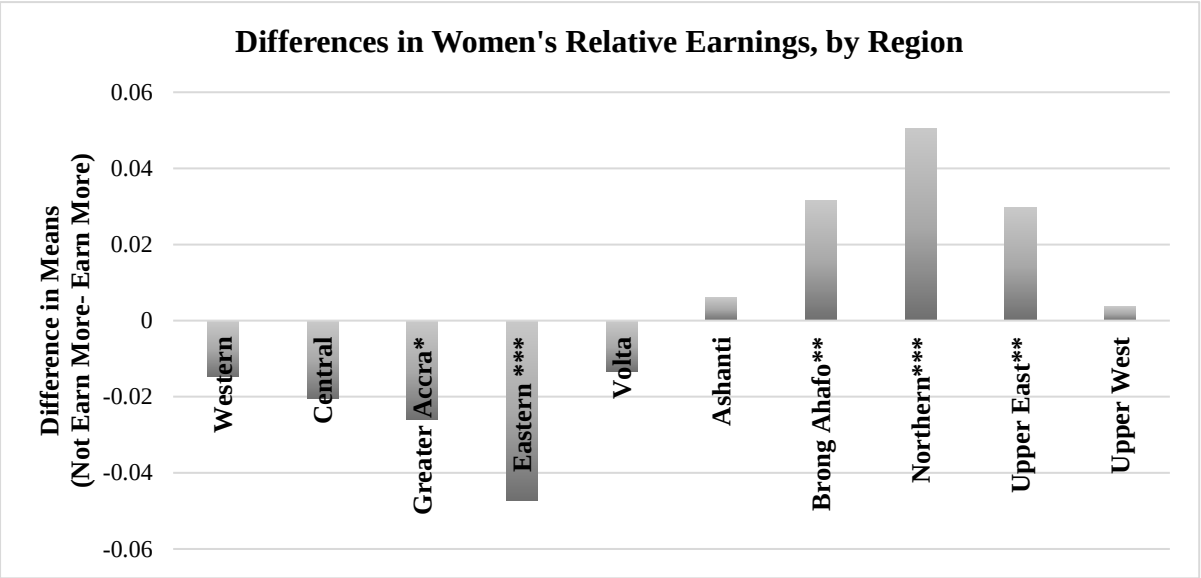
Figure 1: Differences in Women's Earnings Versus Husbands, by Region, GDHS (2008 and 2014)



t statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 2: Occupational Distribution of Women, by Relative Earnings; GDHS (2008 and 2014)

t statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1: Summary Statistics, GDHS 2008 and 2014

	Aggregate		**Not Earn More (NE)**		**Earn More (E)**		**T-Tests**	
	Mean	SD	Mean	SD	Mean	SD	NE- E	T-stats
Socially Empowered	0.73	0.44	0.73	0.45	0.78	0.41	-0.0733***	(-3.67)
Wife earns more	0.1	0.31						
Woman age	34.22	7.71	33.93	7.65	36.69	7.75	-2.623***	(-7.63)
Years of Education (woman)	6.49	4.88	6.43	4.87	7.07	4.99	-0.971***	(-4.41)
Years of Education (partner)	8.67	5.04	8.66	5.07	8.76	4.81	-0.654**	(-2.71)
Age at first marriage	20	4.72	20	4.71	19.97	4.78	-0.133	(-0.65)
Urban	0.49	0.5	0.48	0.5	0.57	0.5	-0.104***	(-4.75)
Christian	0.80	0.40	0.80	0.4	0.81	0.39	-0.000734	(-0.04)
Muslim	0.12	0.33	0.12	0.33	0.11	0.32	0.00457	(0.29)
No religion	0.04	0.19	0.03	0.18	0.05	0.21	-0.0114	(-1.30)
Traditional	0.04	0.19	0.04	0.19	0.03	0.17	0.00748	(0.80)
Wealth scores	19612.73	97542.75	18087.38	98137.47	32755.07	91120.27	-23448.7***	(-5.32)
Professional/Tech/Managerial	0.06	0.24	0.06	0.23	0.1	0.29	-0.0399***	(-3.85)
Clerical	0.01	0.11	0.01	0.12	0.01	0.1	0.00108	(0.23)
Sales	0.47	0.5	0.46	0.5	0.58	0.49	-0.143***	(-6.54)
Agric (Self-Employed)	0.27	0.45	0.29	0.45	0.13	0.34	0.195***	(9.51)
Agric (Employee)	0	0.05	0	0.06	0	0.04	0.00219	(0.81)
Services	0.05	0.22	0.05	0.22	0.05	0.21	0.00349	(0.38)
Skilled manual	0.12	0.32	0.12	0.32	0.13	0.34	-0.015	(-1.02)
Unskilled manual	0.01	0.11	0.01	0.11	0.01	0.1	-0.00364	(-0.73)
Number of living children	3.15	1.99	3.13	2	3.34	1.96	-0.152*	(-1.71)
Spousal age difference	6.72	6.29	6.8	6.29	5.97	6.2	0.671**	(2.28)
Western	0.1	0.31	0.1	0.31	0.11	0.31	-0.0147	(-1.08)
Central	0.1	0.3	0.1	0.3	0.11	0.32	-0.0205	(-1.61)
Greater Accra	0.19	0.39	0.18	0.38	0.23	0.42	-0.026*	(-1.84)
Eastern	0.1	0.29	0.09	0.29	0.13	0.34	-0.0472***	(-3.50)
Volta	0.1	0.3	0.1	0.3	0.1	0.3	-0.0133	(-0.99)
Ashanti	0.21	0.41	0.21	0.41	0.19	0.39	0.00618	(0.40)
Brong Ahafo	0.07	0.26	0.08	0.27	0.05	0.22	0.0315**	(2.46)
Northern	0.07	0.26	0.07	0.26	0.04	0.2	0.0506***	(3.87)
Upper East	0.05	0.21	0.05	0.22	0.03	0.16	0.0296**	(2.27)
Upper West	0.02	0.13	0.02	0.13	0.02	0.12	0.00382	(0.36)
Year (2008)	0.37	0.48	0.37	0.48	0.38	0.49	-0.0141	(0.65)
Observations	5630		5063		567		5630	

t statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Propensity Score Matching, Balancing Tests

	Treated	**Control**	**% Bias**	**t**	**p>|t|**
Woman age	36.39	36.63	-3.1	-0.5	0.617
Years of Education (woman)	6.885	7.138	-5	-0.81	0.42
Years of Education (partner)	8.608	8.698	-1.7	-0.29	0.772
Age at first marriage	19.915	20.172	-5.4	-0.89	0.376
Urban	0.553	0.585	-6.5	-1.05	0.292
Wealth scores	24055	28455	-4.6	-0.75	0.454
Professional/Tech/Managerial	0.1	0.11	-5.6	-0.79	0.428
Clerical	0.011	0.017	-5.3	-0.78	0.436
Sales	0.56	0.522	7.6	1.23	0.218
Agric (Self-Employed)	0.13	0.136	-1.4	-0.27	0.786
Agric (Employee)	0.002	0.004	-3.4	-0.58	0.564
Services	0.038	0.034	1.9	0.33	0.741
Skilled manual	0.143	0.149	-1.7	-0.26	0.794
Unskilled manual	0.015	0.023	-6.5	-0.9	0.367
Number of living Children	3.302	3.196	5.3	0.88	0.38
Spousal Age difference	6.345	6.526	-2.8	-0.46	0.646
Wetern	0.123	0.113	3	0.48	0.634
Central	0.111	0.111	0	0	1
Greater Accra	0.14	0.134	1.7	0.27	0.789
Eastern	0.143	0.125	5.8	0.9	0.368
Volta	0.113	0.119	-1.8	-0.29	0.774
Ashanti	0.138	0.151	-3.8	-0.61	0.541
Brong Ahafo	0.062	0.068	-2.1	-0.37	0.709
Northern	0.043	0.055	-4.4	-0.85	0.394
Upper East	0.07	0.066	1.4	0.24	0.807
Upper West	0.057	0.058	-0.8	-0.13	0.895
Year (2008)	0.375	0.385	-2	-0.32	0.752
	LR chi2	**p>chi2**	**Mean Bias**	**MedBias**	
Unmatched	227.18	0	14.4	9.3	
Matched	10.37	0.997	3.4	3.1	

Table 3- Probit Regression Results, GDHS 2008 and 2014

	Without Interactions (Model 1)			**With Interactions (Model 2)**		
	Full Sample	**Women Completed Fertility**	**Women Not Completed Fertility**	**Full Sample**	**Women Completed Fertility**	**Women Not Completed Fertility**
Woman earns more	0.180***	0.223**	0.177**			
	(2.60)	(2.05)	(2.05)			
Woman age	0.0437*	-0.382	0.0151	0.0487**	-0.450	-0.0135
	(1.94)	(-0.88)	(0.36)	(2.20)	(-1.05)	(-0.29)
Woman age squared	-0.000778**	0.00412	-0.000290	-0.000839***	0.00488	0.000289
	(-2.46)	(0.84)	(-0.43)	(-2.69)	(1.01)	(0.37)
Years of education	0.0327***	0.0242**	0.0367***	0.0347***	0.0277***	0.0379***
(Woman)	(5.47)	(2.26)	(5.21)	(6.02)	(2.68)	(5.40)
Years of education	0.0220***	0.0165*	0.0233***			
(Partner)	(4.23)	(1.71)	(3.86)			
Age at marriage	0.0309	-0.0339	0.0863**	0.0272	-0.0251	0.0860**
	(1.20)	(-0.82)	(2.57)	(1.07)	(-0.62)	(2.44)
Age at marriage (sq)	-0.000900+	0.000534	-0.00218***	-0.000789	0.000365	-0.00220***
	(-1.56)	(0.60)	(-2.81)	(-1.38)	(0.42)	(-2.68)
Urban locality	0.0208	0.0889	-0.0287	0.0394	0.110	-0.00985
	(0.37)	(0.88)	(-0.44)	(0.71)	(1.10)	(-0.15)
Religion (Traditional religion is base)						
Christian	0.268***	0.389**	0.213*	0.272***	0.400**	0.227*
	(2.79)	(2.30)	(1.89)	(2.88)	(2.40)	(1.94)
Muslim	0.336***	0.558***	0.292**	0.310***	0.536***	0.233*
	(3.23)	(3.04)	(2.40)	(3.03)	(2.96)	(1.85)
No religion	0.0411	-0.0287	0.0483	0.0214	-0.00134	0.0292
	(0.32)	(-0.13)	(0.32)	(0.17)	(-0.01)	(0.19)
Household wealth	0.000001***	0.000001	0.000001***	0.0000010***	0.000001	0.000001***
	(2.82)	(1.18)	(2.94)	(2.84)	(1.16)	(2.95)
Occupations (base: Agricultural Self-Employed)						
Professional/Technical/	0.164	0.446*	0.0353	0.227*	0.510**	0.0926
Managerial	(1.37)	(1.82)	(0.26)	(1.92)	(2.09)	(0.67)
Clerical	0.326	0.815	0.214	0.275	0.884	0.0979
	(1.32)	(1.45)	(0.78)	(1.18)	(1.57)	(0.38)
Sales	0.142**	0.198**	0.122*	0.146***	0.233**	0.0860
	(2.53)	(2.00)	(1.84)	(2.64)	(2.38)	(1.26)
Agriculture (employee)	-0.149	-0.440	-0.257	-0.171	-0.435	-0.126
	(-0.52)	(-0.92)	(-0.82)	(-0.60)	(-0.92)	(-0.35)
Service	0.400***	0.730**	0.348***	0.394***	0.855***	0.262**
	(3.31)	(2.38)	(2.63)	(3.36)	(2.86)	(2.01)
Skilled manual labour	0.109	0.330**	0.0543	0.107	0.350***	-0.00244
	(1.56)	(2.44)	(0.68)	(1.55)	(2.64)	(-0.03)
Unskilled manual	0.540**	0.690*	0.596**	0.568***	0.732*	0.510**
labour	(2.57)	(1.84)	(2.41)	(2.72)	(1.95)	(2.01)
Living childen	0.0152	0.0178	0.0200	0.0138	0.0187	0.0114
	(1.09)	(0.89)	(1.08)	(1.02)	(0.96)	(0.58)
Spousal age difference	-0.00441	-0.00394	-0.00644*	-0.00349	-0.00461	-0.00283
	(-1.48)	(-0.78)	(-1.82)	(-1.19)	(-0.93)	(-0.76)
Regions (Base: Northern region)						
Western	-0.184**	-0.0790	-0.205*	-0.233**	-0.102	-0.263**
	(-1.97)	(-0.44)	(-1.90)	(-2.48)	(-0.57)	(-2.36)
Central	0.193**	0.364**	0.122	0.114	0.319*	0.0425
	(1.99)	(2.01)	(1.08)	(1.17)	(1.76)	(0.36)
Greater Accra	0.234**	0.283	0.244**	0.168	0.244	0.146
	(2.23)	(1.40)	(2.00)	(1.61)	(1.21)	(1.18)

Eastern	0.293***	0.513***	0.233**	0.230**	0.501***	0.139
	(3.19)	(2.99)	(2.18)	(2.49)	(2.88)	(1.25)
Volta	0.0266	0.174	0.00990	-0.0374	0.125	-0.0777
	(0.29)	(1.01)	(0.09)	(-0.40)	(0.71)	(-0.69)
Ashanti	-0.202**	-0.117	-0.200*	-0.271***	-0.130	-0.304***
	(-2.24)	(-0.70)	(-1.91)	(-2.99)	(-0.77)	(-2.79)
Brong Ahafo	0.301***	0.520***	0.229**	0.248***	0.508***	0.161
	(3.30)	(2.99)	(2.20)	(2.70)	(2.88)	(1.48)
Upper East	1.123***	1.204***	1.093***	1.068***	1.191***	1.049***
	(10.87)	(6.39)	(9.21)	(10.47)	(6.35)	(8.51)
Upper West	0.491***	0.611***	0.444***	0.442***	0.541***	0.414***
	(4.84)	(3.23)	(3.81)	(4.44)	(2.91)	(3.46)
Year (2008)	0.193***	0.226***	0.168***	0.183***	0.229***	0.166***
	(4.52)	(2.91)	(3.39)	(4.39)	(3.01)	(3.27)
At least primary educ				0.281***	0.136	0.349***
(Partner)				(4.74)	(1.25)	(4.88)
Woman earns more				0.218	0.237	0.179
				(1.45)	(0.98)	(0.92)
EarnsMore*PrimaryEduc				0.424***	0.328**	0.475***
				(4.65)	(2.20)	(4.04)
N	5184	1479	3969	5331	1523	3808

t statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Propensity Score Matching, Stratification Technique, GDHS (2008 and 2014)

Variable	Sample	Treated	Controls	Difference	SE	T-statistics
Social Empowerment	Average Treatment on the Treated (ATT)	0.794	0.736	***0.058***	0.027	2.13