WPS6149

POLICY RESEARCH WORKING PAPER   6149

Women's Access to Labor Market Opportunities, Control of Household Resources, and Domestic Violence

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Abstract

While there are many positive societal implications of increased female labor force opportunities, some theoretical models and empirical evidence suggest that working can increase a woman's risk of suffering domestic violence. Using a dataset collected in peri-urban Dhaka, this analysis documents a positive correlation between work and domestic violence. This correlation is only present among women with less education or who were younger at first marriage. These results are consistent with a theoretical model in which a woman with low bargaining power can face increased risk of domestic violence upon entering the labor force as a husband seeks to counteract her increased bargaining power. By contrast, husbands of women who have higher baseline bargaining power cannot resort to domestic violence since their wives have the ability to leave violent marriages. These findings are inconsistent with the models of assortative matching in the marriage market, expressive violence, work in response to economic shocks, or underreporting of domestic violence. The results on age at marriage are also inconsistent with the implications of a reverse causality model in which women enter the labor force to escape violent situations at home, although the results on education are consistent with that story.

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1 Introduction

Access to labor market opportunities is frequently believed to improve the lives of women. For instance, promoting women's access to economic opportunities is listed in the World Bank's 2012 World Development Report as one of its top five policy priorities in promoting gender equality. Indeed, there are both theoretical arguments and empirical evidence that females' access to labor market opportunities decreases early marriage and childbearing (Singh and Samara 1996; Jensen 2012) and improves women's bargaining power within the household (Blumberg and Coleman 1989; Dharmalingam and Morgan 1996; Rahman and Rao 2004; Anderson and Eswaran 2009; Majlesi 2011). Moreover, labor force opportunities can increase health and educational investments in children of mothers who work (Luke and Munshi 2011; Atkin 2009) or whose parents enroll them in school to improve their chances of gaining better jobs in the future (Oster and Millett 2010; Heath and Mobarak 2011).

However, labor force opportunities may also present unintended negative consequences in the lives of women who gain access to new resources, which may threaten a husband who prefers complete control over the household. In response, a husband may attempt to regain control over household resources through domestic violence. Theoretical household bargaining models show how a woman's access to economic opportunities can either decrease or increase violence, depending on her initial level of bargaining power (Tauchen et al. 1991; Eswaran and Malhotra 2011). A woman's outside option – the utility she would have if she left the marriage – is a key determinant of this bargaining power; a husband must ensure that her utility within the marriage is at least her outside option if he wants her to remain in the marriage. Female work opportunities increase a woman's bargaining power by providing women the option to earn their own income if they leave the marriage.[1]

Specifically, in Eswaran and Malhotra's model, husbands inherently dislike inflicting violence, but may resort to doing so in order to influence the decision of the wife, who is assumed to make the decisions about household resource allocation. So a woman with a bad outside option will not face domestic violence, since she has to make decisions in accordance with a husband's preferences even absent the threat of domestic violence. However, if labor force participation increases her bargaining power sufficiently, she gains the ability to influence household decisions and thus may face domestic violence as her hus-

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[1]This argument does not require the assumption that women will live by themselves, which is still relatively rare in Bangladesh. Women's native families – or other relatives – may be more likely to accept a woman who has fled a marriage if she comes with earnings (Kibria et al. 1998; (Paul-Majumader and Begum, 2006).)

band responds to this potential. By contrast, if a woman's bargaining power rises even higher, the husband must ensure that her happiness in the marriage remains above her outside option. So an increase in bargaining power for a woman who already has high bargaining power will be less likely to increase (and in fact, may even decrease) domestic violence, since she has the option to leave the marriage in response to domestic violence.

This paper looks for evidence for the heterogeneity implied by the Eswaran and Malhotra model,[2] by examining the relationship between a woman's labor force participation, variables that proxy her bargaining power before entering the labor force, and the incidence of domestic violence that she suffers. The setting is a peri-urban area of Bangladesh where many women work in garment factories. I find a descriptive relationship between these variables that is consistent with a model, such as that of Eswaran and Malhotra, in which a woman's bargaining power before entering the labor force is an important determinant of whether she faces domestic violence upon entering the labor force. Specifically, I find a positive correlation between labor force opportunities and domestic violence that disappears amongst women who are more educated or were older at first marriage.

These quantitative results are consistent with interviews conducted during fieldwork and other qualitative evidence from Bangladesh. Specifically, women described how receiving a salary allows them to feel more comfortable asserting a say in household decision-making but that this assertiveness can lead to conflicts, which might break down into violence. Kabeer (1997) points out that factory employment raises a woman's outside option which would allow her to flee bad conditions within a marriage. A nontrivial number of garment workers do actually leave bad situations (Sultan Ahmed and Bould, 2004), suggesting that this is a valid option. Furthermore, as would be predicted by a household bargaining model, Kabeer (1997) points out that the ability to leave improves a woman's treatment even if she does not actually leave. If less educated women – who do tend to earn less than non-educated women in Bangladesh (Pitt et al., 2010) – are less able to provide for themselves on their own, then they may not be able to translate work opportunities into less violence through the credible threat to leave.

I then look for evidence of mechanisms other than pre-work differences in women's bargaining power that may explain these results. However, I do not find evidence consistent with an assortative matching story in which higher status women (better educated or those with higher age at first marriage) attract more enlightened husbands, who do not resort to domestic violence to reassert control after a woman enters the labor force. Nei-

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[2]Eswaran and Malhotra present an indirect empirical test of the mechanism behind their model. They examine whether increases in domestic violence (instrumented by the woman's height or whether she is in breastfeeding) decreases her autonomy.

ther do I find evidence consistent with a model in which lower status women tend to join the labor force in response to a negative economic shock, which might both frustrate her husband and incite domestic violence. Crucial to disentangling these stories is the fact that the data I collected contains both information on assets and income (including from agriculture and household enterprise) as well as measures of domestic violence, which are rare to have in the same data. Finally, while I find that the results for age at marriage are also inconsistent with a reverse causality story in which lower-status women enter the labor force in response to domestic violence, I cannot rule out this possibility for less educated women.

Previous literature has not focused on the heterogeneous relationship between labor force entry and domestic violence based on a woman's characteristics upon entering the labor force. This heterogeneity is important in the Bangladeshi context studied. For instance, the relationship between age at first marriage and domestic violence in the entire sample of women is driven by the much stronger relationship between age at first marriage and domestic violence among women who work; there is a small and only borderline statistically significant relationship between age at marriage and domestic violence among women who do not work. Knowledge of this heterogeneity is important to policymakers who would like to target which working women are particularly likely to suffer domestic violence. Additionally, these results can help explain how studies in various settings have found both positive, negative, and zero correlation between domestic violence and women's labor force participation, suggesting that it depends on the baseline level of bargaining power of women in a particular population. Finally, the bargaining model which is consistent with the results in the paper suggests that while raising women's bargaining power high enough can allow her to escape domestic violence, increased bargaining power among women who have low baseline bargaining power may increase domestic violence. Policymakers should consider this possibility when designing programs meant to improve women's access to the labor force or empowerment more generally.

2 Previous Literature on Women's Labor Force Opportunities and Domestic Violence

2.1 Theories of the Causes of Domestic Violence

There is a large theoretical and empirical social science literature on women's economic activities and domestic violence. Theories of domestic violence can roughly be categorized into instrumental violence theories, in which domestic violence is a tool used by men to control household resources or the behavior of its members, and expressive violence theories, in which violence serves a direct purpose such as relieving frustration.

Many expressive violence theories posit that domestic violence occurs as "backlash" when a newly economically empowered female threatens a man's identity as the most powerful member of the household. While it is difficult to specify precise models of behavior in this context – unlike in instrumental theories the violence is not serving a well-defined strategic purpose – proponents of backlash theories do emphasize that the violence a women faces after an improvement in her economic opportunities can actually increase if her status rises too high relative to her husband. That is, a husband who feels less economically empowered than his wife may resort to violence to reassert a sense of power. For instance, Macmillan and Gartner (1999) find in Canada that labor force participation decreases domestic violence when a woman's partner is employed but increases it when he is unemployed. Jewkes (2002) points out that large differences in occupational status and education levels between spouses also lead to domestic violence in various contexts, consistent with a backlash story.

Instrumental violence theories tend to begin with a model of intra-household bargaining over resources. Unlike expressive theories, the husband does not benefit from the violence itself, and in fact may is often modelled as receiving disutility from violence (Bloch and Rao 2002; Bobonis et al. 2009; Eswaran and Malhotra 2011). However, he is still willing to engage in this costly violence if it can be used to obtain resources or influence household decision-making. In Bloch and Rao (2002), for instance, a husband may use violence to try to extract transfers from his wife's parents. In Eswaran and Malhotra (2011), a wife is the decision-maker on household resource allocation; a husband imposes violence on a wife whose allocation differs from his preferred allocation.

In instrumental violence models, as with all household bargaining models, the outside option of household members is a crucial determinant of bargaining power and thus of the actions that members take in the household bargaining context. Therefore, if a woman's outside option improves, her situation within the household can improve as

she is better able to leave if she is treated poorly (Aizer, 2010). However, women who face very low baseline bargaining power may not realistically be able to leave a marriage. In this case, in the model of Eswaran and Malhotra (2011), a woman can actually face higher risk of domestic violence after her bargaining power increases, as her husband seeks to prevent her from asserting control over household resource allocation.

2.2 Empirical Evidence on the Causes of Domestic Violence

Empirical tests of these theories have examined the effect of several distinct types of income directed toward females: conditional and unconditional cash transfers, microfinance, and labor force opportunities. Since cash transfer programs or microfinance interventions are often randomized or implemented in ways that allow program evaluation via natural experiments, they provide invaluable information on the causal impact of a money given to a woman on domestic violence and important dimensions of heterogeneity of these effects.

There that is no conclusive direction of the overall effect of cash transfer programs, which have become especially common in middle income countries, on domestic violence, but that there are important dimensions of heterogeneity. Bobonis et al. (2009) use data collected two and six years after the Oportunidades conditional cash transfer program in Mexico to show that the program decreased the incidence of domestic violence suffered by women but increased the number of violent threats they receive from their husbands, consistent with an instrumental violence model in which the husband uses violence as a tool to regain control over household income after the wife's outside option increases. These effects fade, however, by five to nine years after the implementation (Bobonis and Castro, 2010). Angelucci (2008) point out an important source of heterogeneity in these average effects: Oportunidades increased domestic violence in husbands who hold traditional gender roles, suggesting that the increased income in the hands of their wife threatens their identity. Perova (2010) also finds a reduction in domestic violence from a conditional cash transfer program in Peru.

Since conditional cash transfer programs typically have health components, their effects on domestic violence could either be due to income effects or contact with health facilities required by the conditionality of the programs.[3] Fernald and Hidrobo (2011) are able to isolate the effects of an income transfer to mothers by evaluating the effects of an unconditional cash transfer program in Ecuador. They find that the transfer decreases

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[3]For instance, even though providing resources to domestic violence victims are not typically an explicit goal of CCT requiring visits to health facilities, if health care providers suspect a woman is being abused, they may seek to help the women when she brings her chidren in for check-ups.

domestic violence in households in which the woman has more than primary education but increases domestic violence in households where the woman has less than primary education, if she has more than her partner.

Other research which has focused on the impact of microfinance on domestic violence has typically not found statistically significant average effects, though as in the studies of cash transfers there are important heterogenous effects among subgroups. Kim et al. (2009) found that a randomly allocated microfinance intervention in South Africa improved women's economic standing but did not decrease domestic violence; although a treatment group that received microfinance combined with gender/HIV training curriculum did suffer less domestic violence. Ferrari and Iyengar (2010) found that a microfinance program in Burundi increased women's reported empowerment but did not affect domestic violence.

Several studies have examined the relationship between domestic violence and microfinance using observational data from Bangladesh. Two studies find a negative correlation between microfinance participation and domestic violence (Bates et al. 2004; Schuler et al. 1996); another finds an overall zero correlation (Ahmed, 2011). An interesting pattern of heterogeneity with respect to time in the program yields the zero average effect in Ahmed (2011). He argues that empowerment programs increase domestic violence in the short run as the household adjusts to the newly empowered women, but decrease domestic violence in the long run as women are able to use their newly improved economic status to demand less violence within the household. Koenig et al. (2003) also find that the effect of participation in a credit group increased the chance of her facing domestic violence in conservative villages but decreased her risk in relatively more liberal villages.

2.3 Work versus Transfers

While these results contribute to an understanding of the relationship between intra-household bargaining and domestic violence, there are several reasons why a woman's labor force participation may impact domestic violence differently from money received in a cash transfer or microfinance program. First, the sample of women choose to participate in the "treatment" is different. While cash transfers typically are available to all women or mothers who are poor enough to qualify, the decision to join the labor force is affected by characteristics of the woman and community, which might interact with her status within the home.

There are also differences in the way in which receiving a transfer or a loan, compared to a paycheck, changes the household's resource endowments between the husband and

wife. Work clearly takes up a woman's time, which may affect her ability to engage in household activities. If the husband prefers that she spend more time on these actitves, he may try to change her behavior using violence. Violence may also affect a woman's work ability, which a husband who is behaving rationally would take into account.

Income from a woman's work also changes the bargaining framework of the intra-household bargaining. The amount of a transfers in a cash transfer program is often well-known public knowledge; by contrast, wives sometimes keep the amount of their salary or bonus hidden from their husband. A husband who suspects this is occurring may resort to violence to compel his wife to reveal this information. Additionally, the time horizon of the cash inflow differs in work versus cash transfer or microfinance programs, depending on the participants' perception of the duration of the program and perceived ability to repay.

Finally, work may have different psychological effects on both the husband and wife, compared to a cash transfer or microfinance program. Work exposes a woman to a different environment than her home, which may affect her perceptions of the acceptability of domestic violence or her information about places to seek help. While cash transfers and microfinance programs also compel a woman to leave the home in order to receive benefits, the duration of time spent is still shorter than at a job. Income received from a woman's work may also have different impacts on the husband, who could perceive transfer income as from the government rather than the woman and thus less of a threat to his identity.

Because of these potential reasons why work opportunities may affect women's incidence of domestic violence differently from transfers or microfinance programs, researchers have explored the relationship between employment and domestic violence, even though it is more difficult causally identify the effects of work opportunities, which are rarely randomized. One notable exception is Hjort and Villanger (2011), who worked with a flower firm in Ethiopia willing to randomize job offers and found that a job caused a statistically significant 13 percent increase the amount of physical violence a woman suffers.

In the U. S. context, Aizer (2010) examines the male-female wage gap, rather than female labor force participation, and finds that increases in relative female wages due to plausibly exogenous changes in labor demand decrease domestic violence. Aizer (2010) may have found opposite effects from Hjort and Villanger (2011) because of differences in baseline bargaining power, as suggested by Eswaran and Malhotra (2011). Namely, women in the U.S. have higher bargaining power absent labor force opportunities, so their reservation utility would be binding and an increase in reservation utility would

decrease domestic violence to keep a woman from leaving the relationship. Other studies show mixed results on the correlation between labor force opportunities and domestic violence (Vyas and Watts, 2009).[4]

This paper looks for evidence of this heterogeneity within a peri-urban population in Bangladesh that is particularly diverse in population and job characteristics. While I will not be able to provide causal impacts of work opportunities, I can take advantage of detailed household survey data to explore the validity of potential stories – both causal and non-causal – that could explain the observed descriptive relationship between domestic violence, household bargaining, and work.

3 Empirical Strategy

3.1 Data

The data for this paper come from a survey of 1395 households outside of Dhaka, Bangladesh that I conducted, along with Mushfiq Mobarak. The survey took place from August to October, 2009. The sampling frame of the survey was every household[5] in 60 villages located in four subdistricts (Savar and Dhamrai in Dhaka District; Gazipur Sadar and Kaliakur in the Gazipur District). On average, each village has 1782 people living in 465 households. These villages are close to Dhaka but not within the city; the average reported travel time into Dhaka is 30 minutes.

This area is a heavy garment-producing area: 34 percent of sampled women between the ages of 18 and 35 work in the garment industry. Unlike garment factories within cities, though, the factories in which survey respondents work tend not to have dormitories. Instead, garment workers commute (commuting an average of 18 minutes one-way) to factories but live in standard household arrangements. Many households are migrants from other districts of Bangladesh[6]; only 34.1 percent of male household heads and 11.2 percent of female household heads were born in the village in which they are now residing.

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[4]Specifically, as detailed by Vyas and Watt, the correlation between work and domestic violence is positive and significant in Peru (Flake, 2005) and Iran (Kishor and Johnson, 2004), negative and significant in Egypt (Kishor and Johnson, 2004), varies depending on the type of employment in India (Panda and Agarwal, 2005), and varies by location in Bangladesh (Naved and Persson, 2005). No correlation was found in studies in Haiti, the Philipines, Zambia, or Cambodia (Kishor and Johnson, 2004).

[5]The actual unit sampled was the *bari*, an extended family compound, because one of the other purposes of the data was the study of social interactions between extended families in the garment industry. Additionally, households with garment workers, consanguineous marriages, or women born between 1975 and 1980 were oversampled. For details of the sampling strategy, see Heath (2011).

[6]Only 6 of the 1395 household heads were born abroad.

Table 1 provide summary statistics of married women in the data, broken down by whether they are currently working outside the home. Since working women are on average younger (27.7 years old) than nonworking women (who are on average 34.1 years old), I also display the difference in means (worker vs. nonworkers) after controlling for age. Taking into account these age differences is important. For instance, while women who work on average have more 0.7 years more education than those who do not, a woman who works has on average 0.4 years less education than a woman of the same age who does not work. Despite less education, women who work have a marginally higher age at marriage, fewer children, and a smaller age difference between husband and wife, relative to nonworkers. The houses of working women are also more likely to have a cement floor. Finally, women who work are considerably more likely to be migrants than nonworkers.

Table 1 also reports variables that reflect the women's status within the home. While it is unsurprising that women workers leave the household compound (bari) much more often than workers due to their work schedules, they also report a greater say in household decisions and a smaller likelihood of needing a husband's permission to buy something for themselves. However, women workers are no less likely than nonworkers to say that it is ever justified for a husband to beat his wife and actually 4.7 percentage points more likely to have ever been beaten in their life than a woman of the same age who does not work ($P = 0.109$). The empirical evidence in this paper will further investigate why women who work report control over household resources but do not seem to be able to translate this higher bargaining power over income into reductions in the violence that they face.

Table 2 provides summary statistics of the nature of the work done by women who participate in the labor force. Seventy-eight percent of women who are working work in the garment industry. These workers typically work long hours, an average of 11.78 hours per day versus 8.34 hours per day for nongarment workers. The average and standard deviation of wages is similar for garment and other workers. The average wage of 3000 taka per month is approximately 36 dollars US and approximately twice the minimum wage at the time of the survey of 1662 taka per month. The typical garment worker has been working for a total of 3.9 years and the typical non-garment worker has been working for 5.9.

3.2 Measures and Empirical Model

Measures of domestic violence and women's status used in the analysis come from the survey module administered to the wife of the household head (or the head if the household is female-headed). Because of the sensitive nature of questions about a woman's status within the household and domestic violence, we used female enumerators for this module and instructed them to politely inform other household members, including the husband, that these questions should be answered in private. Furthermore, we asked enumerators to record if, despite this request, the husband insisted on being present in the interview, which occurred in 17 percent of interviews. There was no statistically significant difference, however, in reported domestic violence in interviews in which the husband was present.

The key outcome, domestic violence, came from the woman's response to the question "Has your husband ever beaten you?" In response, 63.6 percent of women responded "no", 8.8 responded "once", 26.9 percent responded "more than once", and 0.8 percent responded "regularly". I convert the response to a binary outcome that is equal to one if the wife has ever been beaten, which 35.4 percent were. This rate is somewhat lower than the rates found in other areas of Bangladesh,[7] although it is difficult to know whether this difference is due to the specific population and the fact that the data are more recent than in most previous studies or due to underreporting.

The most direct test of the theories in section 2 that relate work opportunities and domestic violence would be whether domestic violence is currently occurring, given the current work status of the woman, rather than the cumulative measure of exposure that I am able to use. Of course, these two measures are correlated, but since the only measure of domestic violence I have is a cumulative measure of lifelong exposure, in section 4.2 I explore the possibility of reverse causality: perhaps women who suffered domestic violence in the past are prompted to enter the labor force to help escape the bad situation.[8]

To help differentiate between the different mechanisms behind the correlation between work and domestic violence, I also examine the relationship between labor force participation and a woman's reported control over resources in the household. Specifically, I use answers to the following questions:

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[7]Forty-two percent of women in two areas of rural Bangladesh in 1993 (Koenig et al., 2003) reported physical abuse and 67 percent reporting any type of violence (33 percent reporting major violence) in 2001/2002 (Bates et al., 2004).

[8]Note that if the only measure I had was current exposure, there would still be reverse causality concerns if domestic violence exposure was serially correlated. In potential follow-up studies, I would plan to ask about both current and past incidence, which would yield valuable information on the timing of domestic violence relative to work exposure.

- Do you need permission from your husband if you want to spend less than 100 Taka? More than 300 Taka? (yes/no)

- Do you need permission from your husband if you want to buy something for yourself? (e.g. bangles, coconut oil, soap)

- Does your husband consult with you often about household decisions? (never/sometimes/often/always)

While these variables are interesting precisely because they are likely to change in response to a women's labor force participation, it is also crucial to have measures of variables that determine a woman's bargaining power with the household but are typically predetermined at the time a woman enters the labor force. I use two primary measures of predetermined bargaining power, age at marriage and education.[9] A higher age at marriage is associated with greater bargaining power within the household (Jensen and Thornton 2003; Mathur et al. 2003), and most (82 percent) of the women in the sample who work began working after marriage. Education is also associated with a higher status within the household in Bangladesh and other locations (Malhotra et al. 2005; Quisumbing and Hallman 2003) and is almost always finished before beginning work or marriage in the Bangladeshi context (Field and Ambrus, 2008).

The theoretical models described in section 2 predict a heterogeneous relationship between whether a woman works and domestic violence, based on these measures of initial bargaining position upon entering the labor force. Accordingly, while I begin by estimating a probit model that assesses the overall relationship between work and domestic violence:

$$Pr(Ever\ Beaten)_i = X_i'\gamma + \beta Work_i + \epsilon_i \tag{1}$$

I then estimate a model that allows the effects of work on domestic violence to vary by a worker's education and age at marriage.

$$Pr(Ever\ Beaten)_i = X_i'\gamma + \beta_1 Work_i + \beta_2 Education_i + \beta_3 Work_i \times Education_i + \epsilon_i \tag{2}$$

To assess whether the interaction term captured by β_3 is indeed linear, I also estimate Lowess curves of the relationship between age at marriage and education and domestic violence, separately by a woman's work status.

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[9]For brevity, I will refer to women with higher age at marriage and more education together as "higher status" women.

4 Results

4.1 Women's Characteristics, Work, and Domestic Violence

Table 3 shows estimates of equations 1 and 2, which assesses how the relationship between work and domestic violence changes with the wife's age, education and age at marriage. I convert the coefficients from the probit model to marginal effects, evaluated at the mean of the independent variable. The first column shows a statistically insignificant and close-to-zero correlation between work and domestic violence. Column 2 shows that there are strong age effects and work-age interactions. The probability that a woman has ever suffered domestic violence increases by 0.003 each year she ages, [10] but an additional 0.011 per year if she works. To assess visually whether the age-work interaction is indeed linear, figure 1 shows a lowess curve of relationship between age and domestic violence, estimated separately among women who work and women who do not. Women below approximately age 24 who work suffer less incidence of domestic violence than women who do work. The incidence of domestic violence among women who work increases steeply with age until approximately age 30 and then levels off.

Column 3 of table 3 and figure 2 depict the relationship between domestic violence, work, and age at marriage. The regression results show that there is a negative relationship between age at first marriage and domestic violence (which is borderline significant, $P = 0.111$) that is even stronger among women who work: the marginal effect of a one year increase in marriage age is an additional 0.024 point decrease in domestic violence among women who work relative to women who do not. Figure 2 shows that there is particularly high incidence of domestic violence among women who work who were 13 or younger when first married; for women married at age 14 and older there is little difference in domestic violence between those who work and those who do not.

Similarly, column 4 of table 3 and figure 3 show the relationship between domestic violence, work, and education. An additional year of education is associated with a statistically significant 0.015 decrease in the probability that a woman suffers domestic violence. Among women who work the decrease in domestic violence associated with an additional year of education decreases is an additional 0.021. Similar to the case with age at marriage, figure 3 shows that women with very low education (2 years or less) who work suffer especially high rates of domestic violence. At higher levels of education, an additional year of education is associated with the same decrease in risk for women who work and women who do not work.

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[10]This result is unsurprising given that the measure reflects cumulative incidence of domestic violence over her life.

I next examine the relationship between these variables and the intermediate outcome of autonomy. In a theory of intra-household bargaining such as that of Eswaran and Malhotra (2011), a woman with higher bargaining power before entering the labor force is less likely to face domestic violence upon entering the labor force. That is, if education is associated with a lower increase in domestic violence among women who work, this is not because work is associated with higher increases in autonomy among educated women, but rather because their autonomy is higher even if they do not work. So we would expect to see a higher rates of autonomy among women who work, and women with more education, but not a positive interaction between the two.

Table 4 uses three measures of self reported decision-making power–as well as a the first principal component from principal components analysis that combines the first three–to test this theory. Overall, the three main patterns that emerge support the Eswaran and Malhotra theory. First, panel A shows that work is associated with higher autonomy. Second, panels B and C show that education and age at marriage are each associated with higher autonomy, as is generally found in various other developing country contexts (Lloyd et al., 2009). Third, there is no evidence that work is associated with differentially higher autonomy in women with more education or higher education. In fact, the interaction term between work and education is negative in the column 4 regression that uses the composite autonomy measure, suggesting that work and education are closer to being substitutes than complements in raising a woman's bargaining power.

4.2 Alternative Explanations

Having established a relationship between a woman's status, bargaining power, and domestic violence incidence, I next look for evidence for mechanisms other than an instrumental violence model than can explain the observed relationships. I first examine whether there is evidence that assortative matching in the marriage market pairs empowered women with husbands unlikely to resort to domestic violence to reassert control after a wife enters the labor force. If this story were true, we would expected that controlling for a husband's characteristics (his education or age at marriage relative to his wife's) would decrease the magnitude of the interaction term between the wife's education or age at marriage and work. However, columns 1 and 2 of table 5 show that, conditional on wife characteristics, both the main effects of the age difference between a husband and wife and his education, as well as the interactions between these variables and whether the wife works, are uncorrelated with domestic violence. Instead, the wife characteristics remain almost identical to the magnitude of those in table 3 which are unconditional on

husband characteristics.

Taken together, the results of table 5 also provide some evidence against a backlash story, at least among husbands whose characteristics the existing literatures suggests are particularly likely to resort to violence to express frustration. The results in columns 1 and 2 argue against the backlash story told by Jewkes (2002), which would predict that there is a stronger relationship between domestic violence and work if there are large age or education gaps between spouses. The third column shows that, unlike in Macmillan and Gartner (1999), there is no stronger relationship between whether a woman works and domestic violence incidence if her husband is unemployed and might be resort to violence to express his frustration with the situation. In fact, the correlation between whether a woman works and domestic violence is actually higher if her husband is employed. Finally, the fourth column shows that there is no increased violence if a wife's income is high relative to her husband's income, which might also be expected to increase his frustration level.

I next consider whether a lower-status woman is more likely to enter the labor force in response to economic hardship, which might also provoke domestic violence, than a higher-status woman who may be more likely to enter due to "pull" factors such as the availability of a good job. I use two approaches to test this theory. The first is to look for increased violence among working women who live in households with certain characteristics that might reflect particularly high levels of stress. One possible source of stress is a husband's job loss, but column 3 of table 5 has provided evidence against this hypothesis. Another possible stressor is migration, and in particular, whether the woman began working after migration. However, column 5 of table 3 shows that the correlation between work and domestic violence is actually lower in migrant households.

The second approach is to control for current household income (table 6) and total household asset value (table 7) in equation 2 and the interaction of each measure with whether a woman works. This equation then compares a woman with relatively high education and a woman with relatively low – but the same current or long-standing economic status of the household – and assesses whether the woman with relatively low education still encounters greater domestic violence when she works. Table 6 shows an interesting pattern between income per capita, domestic violence, and women's status. Column 2 indicates that the positive correlation between work and domestic violence weakens among households with higher income, which at first appears consistent with an economic hardship story. However, once I control for age at marriage and education and their interactions with work, the coefficient on income per capita becomes much smaller in magnitude and statistically insignificant. So the apparent income interactions

15

can be almost entirely explained by the fact that households with higher income tend to have more educated women who married later, who tend to suffer less domestic violence when they work.

Table 7 shows that while the overall rate of domestic violence is lower in households with more assets, there is no evidence that work is more strongly correlated with domestic violence in families with less income or assets, regardless of whether age at marriage and education are controlled for. Furthermore, note that the results in table 4 showing higher reported autonomy among women who work are also difficult to reconcile with a story in which economic shocks are driving both labor force participation and the domestic violence faced by women.

I also look for evidence that underreporting can explain relationship between education or age at marriage, work, and domestic violence. Specifically, perhaps higher status women report domestic violence whether or not they are in the labor force, but lower status women only are compelled to report domestic violence to the enumerators after the exposure to the broader world that comes with entering the labor force. While I cannot test directly for this possibility, some indirect evidence comes from examining the relationship the woman's reported answer to the question "do you believe it is ever acceptable for a a husband to beat his wife?", her status, and whether she works. If labor force participation is differentially compelling lower-status women to report domestic violence, we might also expect it to decrease the probability that they believe domestic violence is ever acceptable. Table 8 shows that while women with higher age at marriage and more education are less likely to believe that beating is ever acceptable, there is not evidence that work experience makes lower status women more likely to believe this; the interaction terms between age at marriage and education and work are all small in magnitude and statistically insignificant.

One additional issue, already discussed in section 3.2, is reverse causality. Without information on the timing of violence faced by women, there is no way to determine whether women enter the labor force to escape violent home situations, which would imply that they face higher rates of violence even before beginning to work. Note that for reverse causality to explain higher correlation between work and domestic violence among lower status women, it must be that lower status women are more likely to enter the labor force in response to domestic violence than higher status women, perhaps because their work options are only attractive to them if they are escaping a bad home situation. This suggests an indirect test of reverse causality: if lower-status women are more likely to select into the labor force after experiencing domestic violence than higher status women, then their jobs will be otherwise less appealing than women with similar

personal characteristics who do not suffer domestic violence.

One key measure of the desirability of a job is the wage it pays. Table 9 shows that earnings are not lower among women who suffer domestic violence who also have low age at marriage. By contrast, there are indeed lower earnings among uneducated women who suffer domestic violence. This finding is of course not proof of reverse causality. There could, for instance, be direct effects of domestic violence on productivity that are more severe among less educated women because the violence they endure tends to be more severe. But it is consistent with a reverse causality story in which domestic violence pushes less-educated women into the labor.

To further investigate the relationship between domestic violence, a woman's status within the home, and her job quality, I can examine in the subsample of garment workers is their reported quality of relationship with management. In the regression with age-at-marriage controls, there is no difference in their reported relationship either by domestic violence incidence or its interaction with age at marriage. In the regression with education and its interaction with domestic violence, the interaction between a woman's education and whether she has ever been beaten is negative, as would also be predicted by a reverse causality story, although not statistically significant at standard levels ($P = 0.269$).

Finally, given the stigma and long hours associated with garment workers in Bangladesh, I test to see whether the incidence of domestic violence differs among women who work in that industry versus elsewhere. The first column of table 10 shows that women who work in the garment industry actually face significantly less domestic violence than women who work in other jobs. The second column adds interaction terms between work and age, age at marriage, and education; with these controls, the coefficient on garment industry drops in magnitude and becomes statistically insignificant from zero. Therefore garment jobs do not seem to be protective per se, rather, they tend to attract relatively higher status women who tend to suffer less domestic violence upon entering work.

5   Conclusion

While there is growing policy interest in providing jobs to women to promote gender equality and development more broadly, policy makers should be aware of potential negative consequences in the lives of females workers, such as domestic violence. This paper has shown that female workers in Bangladesh face greater rates of domestic violence than non-workers, but only those workers who have less education or young age at first marriage. I argue that these results are consistent with a theory in which domestic violence is used instrumentally by husbands to counteract the increase in bargaining power women

17

receive upon working, but women whose bargaining power is sufficiently high can flee violent marriages and thus do not face this increase in violence. While it is not possible to definitively rule out other stories that can explain these correlations, I provide evidence that some of the most natural alternative explanations – husband characteristics, women entering the labor force due to economic stress, and psychological backlash – do not explain the results in this paper. The results on age at marriag, though not education, are also inconsistent with a reverse causality story in which lower status women join the labor force to escape domestic violence at home.

These results point to several policy implications for policymakers interested in counteracting domestic violence. While an instrumental violence model can ultimately deliver an optimistic result – women whose outside option improves sufficiently will not face increased violence and may even face decreased violence – women whose bargaining power is low initially are at risk for increased violence. Therefore when there is the expansion of new jobs in an area, particularly those jobs that hire low-skilled women whose status within the household is likely to be low, policymakers should consider complementary efforts to reduce domestic violence such as information campaigns. If these efforts are successful, communities can reap the benefits of increased female labor force participation without the adverse effects of domestic violence.

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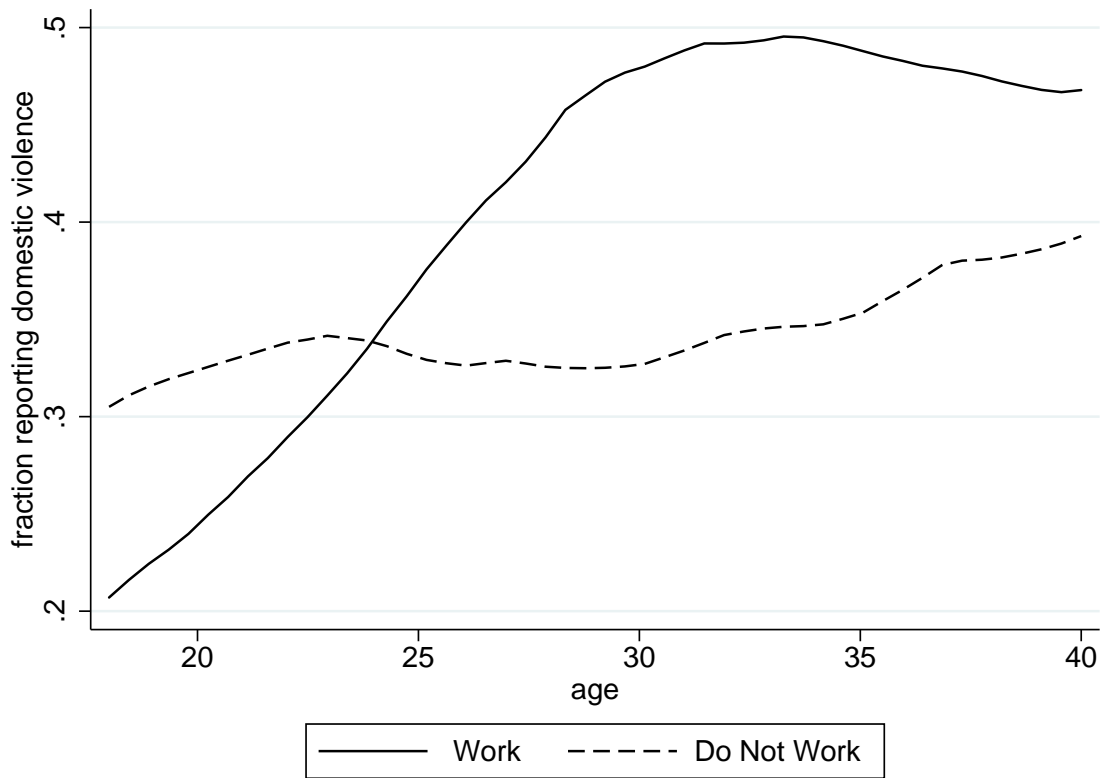
Figure 1: Domestic Violence, Labor Force Participation, and Age
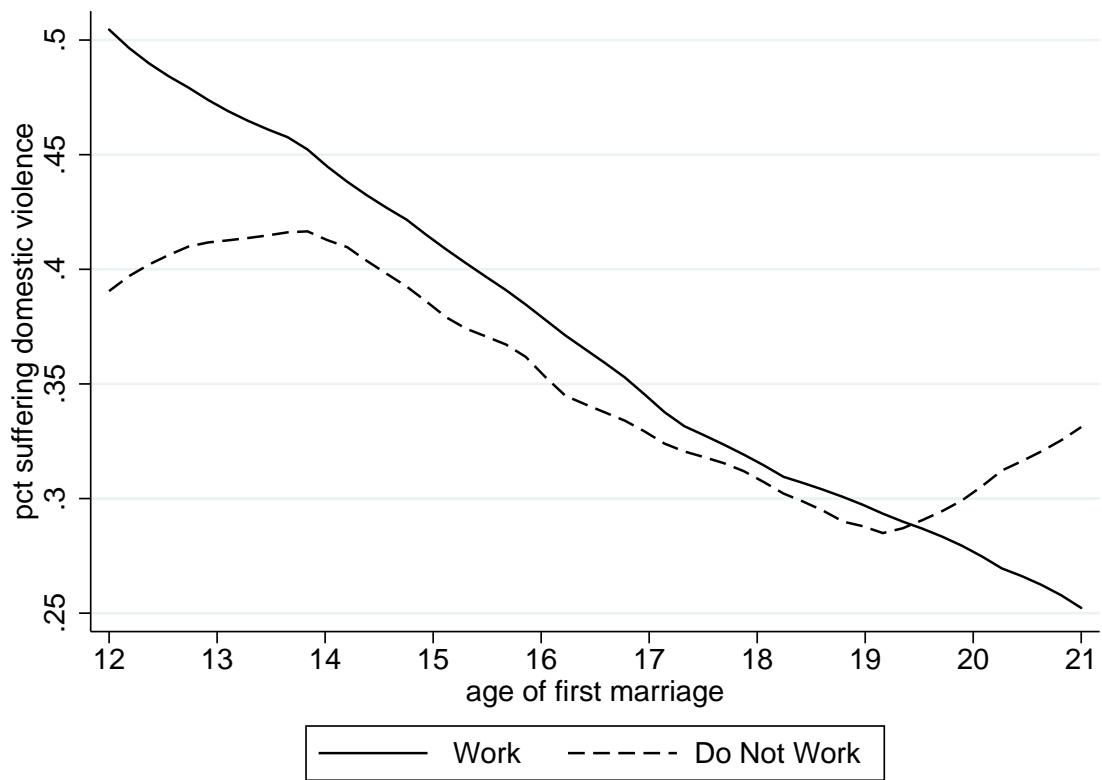
Figure 2: Domestic Violence, Labor Force Participation, and Age at Marriage
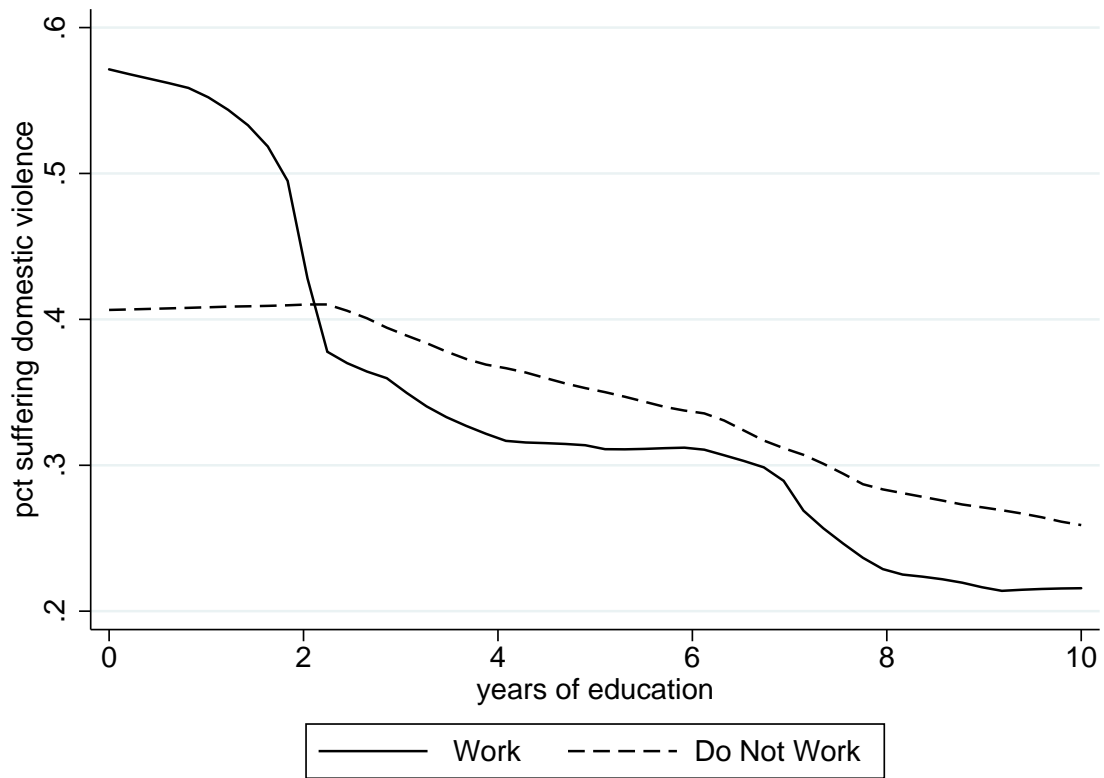
Figure 3: Domestic Violence, Labor Force Participation, and Education

Table 1: Characteristics of Married Women in Sample (n=1334)

Variable	Work outside home	Do not work outside home	Unconditional Differences between workers and non workers		Differences between workers and non workers, conditional on age	
			Difference (workers mean - nonworkers mean)	P-value for t-test of difference in means	Difference (workers mean - nonworkers mean)	P-value for t-test of difference in means
age	27.808	35.423	-7.615	0.000	0.000	0.000
education (years)	4.583	3.588	0.995	0.001	-0.278	0.316
husband education (years)	5.436	4.724	0.711	0.040	-0.297	0.391
age at first marriage	16.633	15.815	0.819	0.001	0.465	0.075
age gap, husband - wife	6.623	9.290	-2.666	0.000	-1.973	0.000
house has cement floor	0.759	0.520	0.238	0.000	0.181	0.000
height (cm)	151.157	151.248	-0.090	0.858	-0.136	0.794
number of children	1.945	3.021	-1.076	0.000	-0.326	0.000
originally from village	0.028	0.140	-0.112	0.000	-0.080	0.000
originally from district	0.133	0.573	-0.441	0.000	-0.369	0.000
ever beaten by husband	0.395	0.350	0.045	0.261	0.080	0.048
believes it is ever okay for a husband to beat a wife	0.641	0.646	-0.005	0.900	0.019	0.633
leaves bari once a week or less frequently	0.128	0.724	-0.596	0.000	-0.583	0.000
need husband's permission to buy something for self	0.224	0.408	-0.184	0.000	-0.146	0.000
husband "always" consults on hh decisions	0.507	0.422	0.086	0.037	0.083	0.051

Table 2: Characteristics of Women in Sample Who Work Outside the Home (n=441)

variable	Garment Industry (n=338)		Non-Garment (n=97)		P-value
	mean	std dev	mean	std dev	diff in means
typical hours per day	11.780	2.448	8.209	1.850	0.000
wage (taka)	2946.413	1384.954	2842.243	1364.929	0.643
experience (years)	3.964	3.693	7.422	5.719	0.000
commute time (minutes)	19.160	13.208	n/a	n/a	n/a

Commuting data available for garment industry workers only

Table 3: Probit Estimates of relationship between Wife Characteristics and Domestic Violence

	Dependent variable = 1(Ever Been Beaten)				
	(1)	(2)	(3)	(4)	(5)
Work	0.017	-0.253***	0.442**	0.119***	0.207*
	[0.036]	[0.078]	[0.181]	[0.045]	[0.124]
Age		0.003*			
		[0.001]			
Work X Age		0.011***			
		[0.003]			
Age First Marriage			-0.008		
			[0.006]		
Work X Age First Marriage			-0.026**		
			[0.012]		
Education				-0.015***	
				[0.005]	
Work X Education				-0.021***	
				[0.008]	
Migrant					0.035
					[0.044]
Work X Migrant					-0.190*
					[0.115]
Work X Migrant X Began Work After Migrating					0.007
					[0.044]
Observations	1,322	1,322	1,321	1,322	1,321

*Standard errors in brackets, clustered at the level of the village. *** p<0.01, ** p<0.05, * p<0.1*

Table 4: Autonomy Measures

Dependent Variable	Consults on HH decisions	Need Permission	Permission to buy for Self	Composite Autonomy
Estimation Method	Ordered Probit	Ordered Probit	Probit	OLS
	(1)	(2)	(3)	(4)
Panel A: Average Effects of Work				
Work	0.216**	0.415***	0.128***	0.590***
	[0.087]	[0.095]	[0.032]	[0.115]
Observations	1,284	1,321	1,321	1,284
Panel B: Interaction with Age at Marriage				
Work	-0.100	0.404	0.215	0.659
	[0.462]	[0.516]	[0.203]	[0.791]
Age First Marriage	0.020	0.016	0.011*	0.038*
	[0.014]	[0.013]	[0.006]	[0.019]
Work X Age First Marriage	0.018	0.000	-0.006	-0.005
	[0.027]	[0.030]	[0.014]	[0.046]
Observations	1,284	1,321	1,321	1,284
Panel C: Interaction with Education				
Work	0.140	0.545***	0.151***	0.748***
	[0.108]	[0.129]	[0.043]	[0.151]
Education	0.040***	0.044***	0.020***	0.079***
	[0.010]	[0.011]	[0.005]	[0.015]
Work X Education	0.011	-0.035**	-0.009	-0.047**
	[0.020]	[0.016]	[0.008]	[0.020]
Observations	1,284	1,321	1,321	1,284

Consults on HH decisions: 0 = never; 1 = sometimes; 2 = often; 3 = always
Need permission: 0 = need permission for a purchase of even 100 taka
  1 = need permission for a purchase of 300 taka but not 100 taka
  2 = do not need permission even for purchases over 300 taka
Permission to buy for self: 0 = yes; 1 = no

Composite autonomy: first principal component taken from principal component analysis that includes all three autonomy variables, where categorical variables converted into a series of dummies (e.g. consults on hh decisions at least sometimes; consults on hh decisions at least often; consults on hh decisions always)

Table 5: Husband Characteristics

	Dependent variable = 1(Ever Been Beaten)			
	(1)	(2)	(3)	(4)
Work	0.374*	0.111**	-0.075	-0.078
	[0.193]	[0.046]	[0.060]	[0.060]
Age First Marriage	-0.008			
	[0.006]			
Work X Age First Marriage	-0.024*			
	[0.012]			
Age Difference Husband-Wife	0.000			
	[0.003]			
Work X Age Difference	0.006			
	[0.006]			
Education		-0.017***		
		[0.005]		
Work X Education		-0.021**		
		[0.009]		
Education Difference Husband-Wife		-0.006		
		[0.005]		
Work X Education Difference Husband-Wife		0.002		
		[0.008]		
Husband Work			-0.028	-0.031
			[0.034]	[0.034]
Work X Husband Work			0.108*	0.060
			[0.063]	[0.081]
Work X Husband Work				0.056
X Relative Wage Wife/Husband				[0.064]
Observations	1,320	1,215	1,215	1,215

Standard errors in brackets, clustered at the level of the village. *** p<0.01, ** p<0.05, * p<0.1. Columns 2 and 3 lose sample size because the education variable is unavailable if husband was away from hh at the time of the survey and thus not classified as a hh member and surveyed

Table 6: Household current income

	Dependent variable = 1(Ever Been Beaten)					
	(1)	(2)	(3)	(4)	(5)	(6)
Work	-0.218	0.392**	0.099	0.565**	-0.280	0.087
	[0.273]	[0.196]	[0.351]	[0.220]	[0.235]	[0.219]
Log(HH income)	-0.003		-0.002		-0.003	
	[0.005]		[0.005]		[0.005]	
Work X Log(HH income)	0.029		0.041		0.048	
	[0.035]		[0.034]		[0.031]	
Log(HH income per capita)		-0.006		-0.004		-0.004
		[0.006]		[0.006]		[0.006]
Work X Log(HH income per capita)		-0.047*		-0.019		0.005
		[0.027]		[0.027]		[0.029]
Age First Marriage			-0.008	-0.008		
			[0.006]	[0.006]		
Work X Age First Marriage			-0.026**	-0.025**		
			[0.012]	[0.012]		
Education					-0.015***	-0.015***
					[0.005]	[0.005]
Work X Education					-0.021***	-0.021***
					[0.008]	[0.008]
Observations	1,324	1,324	1,323	1,323	1,324	1,324

*Standard errors in brackets, clustered at the level of the village. *** p<0.01, ** p<0.05, * p<0.1. Income is calculated by taking the sum of wage income of each household member (using the average between reported income in good and bad months if these values are different), and profit from household enterprise and agriculture (subtracting total costs from revenues for each enterprise run by or crop grown by the household)*

Table 7: Household assets

	Dependent variable = 1(Ever Been Beaten)					
	(1)	(2)	(3)	(4)	(5)	(6)
Work	0.186	0.214	0.115	0.136	0.530***	0.526***
	[0.170]	[0.164]	[0.176]	[0.168]	[0.200]	[0.200]
Log(HH assets)	-0.017**		-0.015*		-0.017**	
	[0.009]		[0.008]		[0.008]	
Work X Log(HH assets)	-0.016		-0.002		-0.012	
	[0.014]		[0.015]		[0.015]	
Log(HH assets per capita)		-0.021**		-0.017**		-0.021**
		[0.009]		[0.009]		[0.009]
Work X Log(HH assets per capita)		-0.02		-0.004		-0.014
		[0.016]		[0.016]		[0.016]
Age First Marriage			-0.015***	-0.014***		
			[0.005]	[0.005]		
Work X Age First Marriage			-0.020**	-0.019**		
			[0.008]	[0.008]		
Education					-0.009	-0.008
					[0.006]	[0.006]
Work X Education					-0.025**	-0.024*
					[0.012]	[0.012]
Observations	1,324	1,324	1,324	1,324	1,323	1,323

Standard errors in brackets, clustered at the level of the village. *** p<0.01, ** p<0.05, * p<0.1. Household assets are the sum of the current value of agricultural land, homestead land (including house), other real estate, rickshaw, cart/van, cows/buffaloes/goats, fan, radio/cassette player, tv, bicycle, wall/table clock, furniture, sewing machine, freezer, mobile phone, and other assets

Table 8: Whether Woman Reports Beating is Ever Acceptable

	Dependent variable = 1(Reports that Domestic Violence is Ever Acceptable)			
	(1)	(2)	(3)	(4)
Work		0.157		-0.022
		[0.146]		[0.050]
Age First Marriage	-0.011**	-0.008		
	[0.005]	[0.005]		
Work X Age First Marriage		-0.010		
		[0.010]		
Education			-0.011***	-0.013***
			[0.004]	[0.004]
Work X Education				0.005
				[0.007]
Observations	1,330	1,318	1,319	1,319

Standard errors in brackets, clustered at the level of the village. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Domestic Violence and Job Quality

Dependent Variable	Log(wage)	Log(wage)	Positive Relationship with Management	Positive Relationship with Management
Estimation Method	OLS	OLS	Ordered Probit	Ordered Probit
	(1)	(2)	(3)	(4)
Ever Been Beaten	-0.124*	0.064	0.137	-0.071
	[0.062]	[0.272]	[0.219]	[0.794]
Age First Marriage	0.013		-0.023	
	[0.008]		[0.027]	
Age First Marriage X Ever Been Beaten	-0.006		0.001	
	[0.017]		[0.049]	
Education		0.011		0.000
		[0.007]		[0.025]
Education X Ever Been Beaten		0.032***		-0.043
		[0.011]		[0.039]
Observations	467	467	359	359

Standard errors in brackets, clustered at the level of the village. *** p<0.01, ** p<0.05, * p<0.1.

Relationship with Management: 1 = excellent; 2 = good; 3 = okay; 4 = bad; 5 = very bad

Table 10: Garment Industry and Domestic Violence

	(1)	(2)
Dependent variable = 1(Ever Been Beaten)		
Work	0.094*	0.200
	[0.055]	[0.265]
Work X Garment Sector	-0.095	-0.025
	[0.061]	[0.056]
Age		-0.003
		[0.006]
Work X Age		0.000
		[0.002]
Age First Marriage		-0.014**
		[0.006]
Work X Age First Marriage		-0.022
		[0.013]
Education		0.009**
		[0.004]
Work X Education		-0.009
		[0.009]
Observations	1,324	1,323

Standard errors in brackets, clustered at the level of the village.

*** p<0.01, ** p<0.05, * p<0.1.*