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JEL Codes: D13, I15, J12, J16, O12

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PARIS-JOURDAN SCIENCES ÉCONOMIQUES

48, Bd JOURDAN – E.N.S. – 75014 PARIS
TÉL. : 33(0) 1 43 13 63 00 – FAX : 33 (0) 1 43 13 63 10
www.pse.ens.fr

Measuring Women's Empowerment: lessons to better understand domestic violence*

Diana Lopez-Avila^{†1}

¹*Paris School of Economics*

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Abstract

This paper aims at shedding light on the relationship between women's empowerment and domestic violence. For this, we explore different ways to measure women's empowerment and domestic violence, and analyze whether the relation depends on the definitions used. We take advantage of a rich data set collected in rural Colombia, including several measures of self-esteem, disagreement towards domestic violence, participation in household decisions and social capital; and analyze the relationship with both aggressive and controlling ways of domestic violence. The results indicate that the different measures of women's empowerment help explain much better the aggressive ways of domestic violence than the controlling ones. Our results show a positive correlation between women's empowerment and domestic violence. This goes in line with the theories that argue that men use violence as a way to leverage their power within the household. Among the different latent measures of women's empowerment we used, we found that social capital and self-esteem are significantly correlated with aggressive domestic violence. We do not find that more common proxies, such as women's participation in household decisions, are significantly correlated to domestic violence.

Keywords: Gender, Domestic Violence, Household bargaining models, Social Capital
JEL classification: D13, I15, I31, J12, J16, O12

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[†]diana.lopez@psemail.eu

Introduction

Violence against women constitutes an obstacle for social and economic development. Domestic violence is associated with health and psychological problems for women [Ellsberg et al., 2008], [WB, 2014]; and adverse consequences for children later in life [Unicef, 2014]. Boys who witnessed their mother being beaten are at a higher risk of becoming violent partners [Heisse, 2011]; and moreover, families that experience spousal violence are more likely to experience violence against children [Herrenkohl et al., 2008], [WB, 2014]. Being victim of domestic violence can also have important economic consequences. Severely abused women earned 61% less in Chile and 43% less in Nicaragua, as compared to non-abused women [Morrison and Orlando, 1999]. Estimations on the impact of domestic violence on GDP in Colombia, due to women’s lower earnings, suggest a cost of approximately 3.2% [Ribero and Sanchez, 2004].

Despite the fact that domestic violence is a serious problem that constrains women’s economic and social development, understanding the correlates of domestic violence is not straightforward. Women’s bargaining power and domestic violence are closely intertwined, and defining women’s bargaining power can be complex. This paper contributes to the literature by providing descriptive evidence on the relationship between women’s empowerment and domestic violence. As a starting point, we compute aggregate measures of women’s empowerment and domestic violence, taking into account the different dimensions we captured in our survey. We show a positive relationship between women’s empowerment and domestic violence, which can seem a bit puzzling. This goes contrary to the common idea that more empowered women are more able to stand for their rights and hence, less exposed to domestic violence. However, economic and sociological theories provide arguments on why the relationship between domestic violence and women’s empowerment can go in both directions, [Farmer and Tiefenthaler, 1997], [Tauchen et al., 1991] [Bloch and Rao, 2002], [Eswaran and Malhotra, 2011], [Heisse, 2012].

To better understand and dig deeper into this relationship, we implement a factor analysis to disentangle the different latent dimensions of empowerment and domestic violence. We explore dimensions of women’s empowerment such as self-esteem, disagreement towards domestic violence, willingness to divorce, participation in household decisions, social capital, income and education. We also differentiate the aggressive ways of domestic violence from the controlling behavior from the partner. Drawing on the different theories on domestic violence, we include different socio-demographic characteristics that the theory predict to be correlated to domestic violence, such as woman’s and partner’s income, age and education; participation in the labor market, type of union, and experience of domestic violence as a child, among others. Evidence found in this paper helps to better characterize the relation between women’s bargaining power and exposure to domestic violence, by suggesting which can be the proxies that better describe women’s autonomy. We interpret the empirical findings within the theoretical models that have analyzed domestic violence.

Measuring women’s bargaining power is not straightforward. Women’s empowerment has multiple dimensions [Alkire, 2007]. Usually, concepts such as access, ownership, entitle-

ment and control are used interchangeably [Kabeer, 1999]. In a recent work, the Food Policy Research Institute (IFPRI) and the Oxford Poverty and Human Development Initiative (OPHI), tried to encompass the different dimensions and spheres of women’s empowerment in agriculture [Alkire et al., 2014], [Alkire et al., 2013]. They identify five main domains of empowerment: decisions about agricultural production, access to and decision making power over productive resources, control over use of income, leadership in the community, and time allocation. Although this index is a step forward to better measure women’s empowerment, it has some limitations. Women who do not actively participate in agriculture may appear less empowered, as they take decisions in non-agricultural issues. On the other hand, in households where there are no males, women may appear more empowered, as they do not have to whom to bargain for household decisions.

A common way in which researchers have approached women’s empowerment is through their participation in household decisions. Usually, surveys contain a set of questions asking about who is in charge of the income use, the type of food consumed, children’s schooling or the use of contraceptive methods, among others. However, deciding which type of food to buy may not have the same consequences as deciding whether or not to send children to school, or whether or not to use contraceptive methods. Besides, it is not clear whether sole decision making implies more empowerment than jointly decision with the partner. Usually, joint decision is the most common answer, leaving limited variation across answers [Almas et al., 2015]. This limited variation may help explaining why social programs, such as CCTs, do not seem to be drivers of women’s empowerment. For *Progresa* in Mexico, results show a reduction in the likelihood of sole decision-making by husbands with regard to medical treatment, school attendance, and child clothing, due to the program; but no strong impact on the likelihood that women solely, or jointly with their partners, decide [Adato et al., 2000]. For *Familias en Accion* in Colombia, results suggest that there is no change in women’s decision power, [Camacho and Rodriguez, 2012]. Authors analyze household’s decisions on children’s health, children’s school attendance, clothing expenditure for children, food expenditure and the use of additional income in the household. For none of the outcomes a significant impact is found.

In a recent work, [Almas et al., 2015] use a novel way to measure women’s empowerment within the household. In a lab setting in Macedonia, they measure women’s willingness to pay to receive cash transfers instead of their partners. Besides, authors take advantage of the random assignment of a CCT to the household heads or mothers, at the municipality level. Authors find that women are willing to sacrifice some household income in order to receive the cash transfer. However, this willingness is lower in municipalities where women have already been empowered by the CCT (eg. municipalities where women were assigned to receive the CCT). Following a similar line, [Peterman et al., 2015] analyze survey experiments undertaken in cash and food transfer programs in Ecuador, Yemen, and Uganda. Authors find large variations in how women are ranked in terms of decision making depending on how questions are framed and indicators are constructed. Besides, authors find that decision making indicators are not consistently associated with other proxy measures of women’s empowerment, such as women’s education. The only factor that matters across countries is women’s age, which is positively correlated to the decision making power.

Given the difficulty to accurately measure women's empowerment and domestic violence, the empirical evidence on the association between women status within the household and domestic violence is mixed, as well as the evidence on the impact of social programs on domestic violence. Women with partners who have education secondary or higher are less likely to experience domestic violence in countries such as Egypt and India, but more likely in countries like Peru. Receiving cash (while not working) is negatively associated with experiencing domestic violence in Egypt, but positively associated in India and Peru, [Kishor and Johnson, 2004]. Female dominated decision making is associated to higher levels of domestic violence, in countries such as Peru and Haiti, [Flake, 2005], [Gage, 2005]. Regarding financial inclusion and domestic violence, results from the IMAGE study in South Africa and a group-based credit program in Bangladesh, show that treated women are less likely to experience domestic violence, [Kim et al., 2007], [Schuler et al., 1996].

In the case of the *Oportunidades* program in Mexico, results show that beneficiary women are less likely to be victims of physical violence, but more likely to receive violent threats with no associated physical violence [Bobonis et al., 2013]. Another study shows that there is a decrease in violence towards women receiving small transfers; while there is an increase towards those receiving large transfers, particularly with partners with traditional views of gender roles, [Angelucci, 2008]. Results from a unconditional cash transfer in rural Ecuador suggest that women's education matters for the direction of the impact. There is a significant decrease in psychological violence for women with education greater than primary. However, there is an increase in emotional violence for women with primary education or less, but higher or equal than that of their partners [Hidrobo and Fernald, 2013].

Other socio-demographic characteristics have also shown to be associated with domestic violence. Young and less educated women seem to be at an increased risk of domestic violence [Heisse, 2012]. Living with a partner without formal marriage also appears to increase women's risk of domestic violence [Kishor and Johnson, 2004], [Flake, 2005]. According to data from the Demographic and Health Survey of 2010 in Colombia, women in a civil union report higher rates of emotional and physical violence, [Ojeda et al., 2011]. The larger the number of children in the household, the higher the women's risk of domestic violence, [Heisse, 2012]. Exposure to violence during childhood also appears to increase the likelihood of experiencing domestic violence as an adult, as well as partner's alcohol consumption, [Kishor and Johnson, 2004]. Couples where both partners work appear to be at a (slightly) higher risk, as compared to couples where only the man works, [Heisse, 2012].

Previous empirical evidence shows that the relation between women's status and domestic violence can go in different directions. The economic, sociological and psychological theories have also shown that the relation between women's empowerment and domestic violence can be positive or negative. Sociological theories point out that women's and partners' resources are important at determining domestic violence, suggesting that women with higher status in the household are at a higher risk of abuse. The resource theory states that men with fewer resources would be more likely to use violence. Men facing an economic crisis or unemployment, may be more vulnerable to perpetrate abuse [Goode, 1971]. Related to this theory is the relative resource theory, which states that women with higher status than their partners

will be at a higher risk of abuse. Men use force or psychological manipulation to reaffirm their dominant status [Macmillan and Gartner, 1999]. The status inconsistency theory states that wife beating may be high in settings where men’s traditional power in the family has declined, while women’s power has increased [Levinson, 1989]. In a similar line, the gender role stress theory argues that when economic or social conditions make men feel powerless, they exert power where they still can: the family [Jewkes, 2002]. From the psychological side, exposure to violence and poor parenting in childhood can influence the likelihood of future violence. This influence can be through modeling or through the negative impacts on child development [Dutton, 1995].

Family as an economic unit has been analyzed for several decades. The economic theories that have modeled domestic violence have approached it through a non-cooperative setting. One set of theories predict that an increase in women’s reservation utility leads to a decrease in domestic violence. In a setting when men can buy domestic violence through the monetary transfer they make to women, an increase in women’s wages, hours worked or non-wage income, is going to decrease the value of the transfer; hence, the level of domestic violence [Farmer and Tiefenthaler, 1997]. Similarly, [Tauchen et al., 1991] argues that men use violence towards women for a behavior of which they do not approve. He predicts that an increase in the woman’s income is going to lead to a decrease in violence, while a rise in the husband’s income leads to an increase. Empirical evidence shows that this is true for all households, except the highest income ones. These economic approaches have also the support from the sociological theories. The fewer resources a woman has, the less power she has, and the less likely she is to leave an abusive relationship [Heisse, 2012].

Another set of theories allow domestic violence to affect women’s bargaining power. Within this framework, the extent of domestic violence faced by women is not necessarily declining in their reservation utilities, or necessarily increasing in their spouses [Bloch and Rao, 2002], [Eswaran and Malhotra, 2011]. Greater domestic violence may also be a rational male response to the greater autonomy of women. These approaches go in line with the evolutionary theory, which states that domestic violence originate from paternity uncertainty [Heisse, 2012]. Men could think that more independent women will have more sexual contact with other men. In this setting, spousal violence is intended to increase the abuser bargaining power. [Bloch and Rao, 2002] propose a model of asymmetric information, in which the husband uses violence to signal to his in-laws the degree of satisfaction with the marriage. Women from wealthier families are more likely to be beaten, as violence is used as a weapon for extortion.

This paper aims to shed light on the relation between domestic violence and empowerment. We take advantage of a data set collected to evaluate a rural development program, *Oportunidades Rurales* (OR), and the possible synergies it could have with a Conditional Cash Transfer (CCT), *Familias en Accion*. *Oportunidades Rurales* is a rural development program that provides technical and financial assistance to small rural entrepreneurs. Women who participate in these organizations have to attend meetings regularly, having access to more information and higher contact with other women. We implement a factor analysis to get the different measures of women’s empowerment and domestic violence. The women’s

empowerment factor analysis suggests four factors to model women’s empowerment. One factor corresponds to measures referring to self-esteem and disagreement towards domestic violence. A second factor corresponds to intra-household decision making. A third factor, to the role of women in the productive organization receiving *Oportunidades Rurales*; and a fourth factor, to the women’s social network. The domestic violence factor suggests two factors, one mainly loading on aggressive behavior, and a second one on controlling behavior from the partner.

Our results suggest that the different measures of women’s empowerment help explaining much better the aggressive ways of domestic violence, rather than the controlling ones. Moreover, social capital, together with women’s self-esteem, appears to better capture women’s autonomy. These two dimensions of women’s empowerment are positively correlated to domestic violence. On the contrary, we do not find women’s participation in household decisions to be correlated to domestic violence. Among the socio-demographic characteristics, living in a rural area or having a larger number of children in the household, is positively correlated with experiencing aggressive ways of domestic violence; while a larger household size is negatively correlated. Results found in this paper go in line with the economic models that predict an increase in domestic violence due to an increase in women’s reservation utility. In these cases, partners use violence as a way to leverage bargaining power within the household.

The rest of this paper is organized as follows. Section 1 describes the data and the framework of the interventions for which it was collected. Section 2 provides some descriptive evidence motivating the analysis. Section 3 provides the results together with the robustness checks; and Section 4 concludes.

1 Data

In 2013, as part of a initiative of The International Fund for Agricultural Development (IFAD), the Universidad de los Andes in Colombia collected data to evaluate the impact of *Oportunidades Rurales* and the possible complementarities it could have with *Familias en Accion*. *Oportunidades Rurales* (OR) is a rural development program financed by the International Fund for Agricultural Development (IFAD) and launched in 2007. *Oportunidades Rurales* aims at increasing productive, human and financial assets of small rural entrepreneurs, through technical and financial assistance. The program has a demand-driven approach, in which rural productive organizations and households need to identify their specific needs and use of funds. Between 2007 and 2013, 1,817 organizations and 47,018 households benefited from the program. Organizations belong to 714 municipalities in 25 (out of 32) departments of the country¹, [Econometria, 2014]. The selected organizations received joint financing for technical assistance in productive (inputs or physical capital), commercial (packing or image of products), or administrative aspects. They also participated in commercial fairs at the local and national level. OR targets productive organizations that gather farmers belonging to the poorest population of the country. Priority was also given to organizations of young

¹Departments such as Huila concentrated a large number of beneficiary organizations.

people and women. In terms of geographic location, the program was prioritized to rural areas with high poverty rates, presence of violence and displaced population; but also with high presence of farmers' organizations.

Familias en Accion is nowadays the largest social program in the country². It has been implemented since 2002 and has the traditional components of a Conditional Cash Transfer (CCT), nutrition, health and education. The nutrition component consists of a monetary supplement given to all beneficiary families with children under 7 y.o. The health component consists of vaccination and growth and development checks for children, and courses of nutrition, hygiene and contraception for mothers³. The education component is given to families with children 7 to 17 y.o., and the amount of the subsidy changes between primary and secondary. The transfer for a family that received the education, for primary and secondary, and the nutritional subsidy, will represent approximately 35% of its income⁴. Families belonging to *Sisben* 1 and with children 0-18 y.o are eligible for the program. *Familias en Accion* has shown to be successful in improving children's nutrition, health and education. The program has increased protein consumption, school enrolment and health outcomes, such as height for age and weight for age, [Attanasio and Mesnard, 2006; Attanasio et al., 2012].

Data were collected for 59 organizations between January and June 2014⁵. The survey was designed following the Colombian Longitudinal Survey of Wealth, Income, Labor and Land (ELCA) carried out by Universidad de los Andes since 2007. The survey included modules on consumption, production, assets ownership, labor, education, time uses and food security, among others. Two additional sections were included, one referring to expectations and another to gender.

The gender section was specifically designed for this study. It was designed building on the domestic violence section of the Demographic and Health Survey (DHS), and the gender section of a survey to evaluate the impact of a CCT in Malawi⁶. The gender module includes three sections. One in which women were asked about their self-esteem, and their agreement/disagreement towards domestic violence. A second one on household decision making on income uses, expenditures in clothing and education, and contraceptive methods. The last section corresponds to the domestic violence one, in which women were asked about occurrence of different events of violence. The events of domestic violence include emotional and physical violence. Emotional violence includes situations such as: has your partner accused you of being unfaithful, has humiliated you, has threatened to leave you for another woman, has threatened to hit you, does your partner not allow you to meet your family and friends,

²The program covers all municipalities and 2.6 millions of families. Taken on July 27th of 2014 from http://www.dps.gov.co/Ingreso_Social/FamiliasenAccion.aspx

³The participation in the health checks and courses is compulsory to receive the nutritional subsidy

⁴The conditionality and amounts of the transfers changed in 2013, when the program was redesigned, being now known as *Mas Familias en Accion*

⁵Sampling was done using year of entering into the program, productive activity and geographical location. Also, the score the organizations got at submitting their proposals was taken into account. Members of the organization were randomly selected within each organization.

⁶I thank Berk Ozler, at the World Bank, who shared with me the household survey for the Schooling, Income and Health Risk project in Malawi

has insisted in knowing where you were all the time. Physical violence includes events such as: has your partner pushed you or hit you, or has forced you to do things you did not want in the intimacy. This section was asked under the condition of complete privacy and all enumerators were women. The section also includes questions on willingness to get divorced and on the reasons women consider domestic violence started or increased.

The quantitative data collection was complemented with qualitative work to get some insights on how women's participation in the organization may interact with domestic violence. We ran focus groups with male and female members of the associations. The gender module developed during the focus groups included a discussion on gender roles and women's participation in the organization. We also did some semi-structured interviews to rural women to approach how common it was to be victim of domestic violence, how open they were to talk about it, what kind of events of domestic violence they experienced and, what were the reasons they expressed for the events of violence to occur. During this qualitative work, women expressed that episodes of domestic violence were highly associated with partner's alcohol consumption. They also expressed that before the episodes of physical violence took place, their partners showed a possessive behavior. Partners appear to be jealous of women going out often and meeting other women⁷.

The data set contains a rich module, asked to women in a confidential setting, specifically designed to explore the relation between women's empowerment and domestic violence. We approach women's empowerment in different ways, self-esteem and acceptance of domestic violence, participation in household decisions and, social capital; as well as the traditional measures, such as education and income. Following, [Kabeer, 1999], women's empowerment can be seen in three big inter-related dimensions: resources, agency and achievements. We consider that our measures will shed light on these different dimensions of women's empowerment. We also collected information on events of aggressive domestic violence and controlling behavior. Moreover, we collected information on women's desire to get divorced and the reasons associated; as well as on the reasons they consider domestic violence started or increased. Information on other characteristics that may affect domestic violence is also available, such as type of union, labor force participation and having witnessed domestic violence as a child. This comprehensive set of information gives us the opportunity to shed light on the relation between women's empowerment and domestic violence, and the sensitivity of the relationship to different measurement choices.

For self-esteem and acceptance of domestic violence, we use a set of variables asking about how proud women were of themselves and how capable they saw themselves of doing different things. We also ask about whether women agree or disagree on traditional gender roles, such as the fact women should always obey their partners, or that the use of domestic violence could be accepted under some circumstances. For household-decision making, we use a set of questions asking about the main decision maker on household consumption and income

⁷A 40-year old woman from Espinal-Tolima expressed the following: "I think most of the cases of domestic violence happen because husbands drink (alcohol). They always accuse women of being unfaithful... A lot of husbands do not like when women participate in meetings with other women, such as the ones done by *Familias en Accion*. They say that women go there to gossip and to meet who knows who"

use. For social capital, we characterize the role of women in the productive organization that received *Oportunidades Rurales*, as well as their social networks. In the case of domestic violence, we asked if women have ever experienced different events of domestic violence. These events included aggressive ways of violence, such as hitting or threat to hit or abandon for another woman; and controlling ways, such as accusation of being unfaithful or limiting contact with families and friends.

For those who were members of the organization, a social capital module was asked. This module included questions on the actual participation in the productive organization, as well as on the participation in other type of organizations. Members were asked about whether or not they were still part of the organization, the time they have been participating, their role in the organization, the frequency in which they attend the meetings, whether or not they participate in the decision process and the reason that motivated them to participate in the organization. They were also asked in which other organizations they participate, such as Communal Action Boards or Parents Associations; and whether or not they were leaders of these organizations.

The final sample for which data was collected, corresponds to 729 households and 59 organizations located in the Departments of Boyacá, Caldas, Cundinamarca, Huila, Risaralda and Tolima. Organizations included in the sample account for, approximately, 36% of the total of programs financed by OR in the period of analysis. The productive activities done by the organizations correspond mainly to dairy, fruits and minor species. Among the 59 organizations, 16 received OR in 2008-2009 and 43 in 2012-2013. Some of the surveys took place at the headquarters of the organization, which implied that it was not possible to complete the gender module due to lack of privacy. Because of this, among the 729 households interviewed, only 283 answered to the gender section⁸. Among the 283 women, 198 are members of the organization, while 85 are spouses of members of the organization.

2 Descriptive Analysis

Given that only a bit more of one third of the sample answered to the gender section, some selection concerns may arise, though the reason to not answer to the gender section was not because the woman declined to answer the section. Table A.1 shows some basic statistics for the whole sample, and Table A.2 shows the differences by whether or not they answered to the gender section. Households of women who answered to the gender section appear to be larger, have less assets in 2008 and less land. We include all these variables as controls in the estimations we further present.

Our sample focuses on women who are in a union, which accounts for 268 women. However, we do not have information on all variables referring to empowerment and domestic violence for all women in a union. Table 1 provides the number of observations based on the non-missing data on empowerment and domestic violence. The final sample of women who

⁸In some cases, the eligible woman to answer the module was not present at the moment of the survey

are in a union and for which there is information on all variables referring to empowerment and domestic violence, corresponds to 204 observations.

Before describing the factor analysis, we start motivating our analysis by building aggregate measures of women’s empowerment and domestic violence. For this, we build one index for women’s empowerment and one for domestic violence. To build the indices, we computed the z scores for each of the variables used in each of the factors; and then, we computed the mean of the z scores of the variables related to women’s empowerment and domestic violence, separately. The top graph of Figure 1 shows how the index of women’s empowerment correlates to the index of domestic violence. The graph suggests that for low levels of empowerment (eg. negative values), the relation between women’s empowerment and domestic violence is flat; while for high levels of empowerment (eg. positive values), women’s empowerment is positively correlated to domestic violence. The bottom graph shows the Kernel distribution of the empowerment Index. To corroborate the relationship observed in Figure 1, we estimate Equation 1.

$$IndexDV_j = \alpha + \beta_1 Index_j + \beta_2 X_j + \epsilon_j \quad (1)$$

Where $IndexDV_j$ corresponds to the index of domestic violence aggregating the aggressive and the controlling ways for woman j. $Index_j$ corresponds to the index aggregating all measures of empowerment, including women’s income and education. X_j represents a set of individual and household characteristics, such as household size, household head age and education, assets owned in 2008, dummy for rural area, land size, woman’s age, woman’s age at starting the union and previous experience of domestic violence, and a dummy indicating whether partner and woman work. Finally, ϵ_i is the error term.

Table 2 corroborates the results found in the graphical analysis. An increase of 1 standard deviations in the women’s empowerment index is associated with an increase of 0,3 standard deviations in the index of domestic violence. This is robust to adding controls. The only household characteristic that significantly correlates to the index of domestic violence is the dummy indicating whether or not women live in rural areas. Living in a rural area is correlated with a 0,2 standard deviations increase in the likelihood of experience domestic violence. Although this relation between women’s empowerment and domestic violence may look a bit surprising, it goes in line with the economic theories that suggest that greater domestic violence may also be a rational male response to the greater autonomy of women [Bloch and Rao, 2002], [Eswaran and Malhotra, 2011]. Men use violence to increase their bargaining power.

To better analyze how women’s empowerment correlate to domestic violence. We implement a factor analysis, following [Attanasio et al., 2015]. A latent factor model is usually done to investigate concepts that are not easily and directly measured. In this case, different observed variables are associated with women’s empowerment and domestic violence, which

corresponds to the two variables we are interested in describing. The factor analysis allows understanding the patterns across the different observed variables, identifying measures (eg. latent variables) representing a group of variables. Each factor captures a certain amount of the overall variance in the observed variables; being the first factor the one that helps explaining most of the variation.

To estimate the factor, we use the regression scoring (Thomson (1951)), which is defined as: $\hat{f} = \Phi \Lambda' \Sigma^{-1}x$. Where, Φ is the correlation matrix of the common factors, Λ represents the factor loading matrix, and x the vector of observed variables.. The loadings indicate how important is the variable within the factor. Measures are allowed to load on more than one factor, instead of assuming a dedicated measurement system. One of the purposes of the analysis is also to see if one variable falls into more than one dimensions, or measures, of empowerment. We also use an oblique rotation, as the different measures of women’s empowerment and domestic violence can be correlated among them.

For the women’s empowerment factor analysis, we took into account variables referring to self-esteem, disagreement towards domestic violence, willingness to divorce, intra-household decision making, role in the productive organization receiving *Oportunidades Rurales*, and the women’s social network. We consider that these variables attempt to cover different dimensions of women’s empowerment. Besides the variables included in the gender section, we also include variables captured in the social capital section. The inclusion of the variables related to social capital is not only motivated by the nature of our sample, eg. women and men who participate in productive organizations; but also by previous evidence that have suggested that women’s participation in micro-finance programs can challenge gender roles, [Schuler et al., 1998]. A similar situation can take place with the participation in productive organizations.

Variables related to self-esteem tell us about how confident women are of themselves, as well as the variable related to willingness to get divorce⁹. We may think that more self-confident women can exercise better agency in other domains, such as participating in decision making or in productive organizations. A first step towards being more empowered, can be acquiring higher self-esteem and confidence. In the same line, women who do not agree with domestic violence may be more likely to stand for their rights. Participation in household decision making has been a common, though not perfect, way to approach women’s bargaining power, [Peterman et al., 2015], [Almas et al., 2015]. We may think that more empowered women are more likely to participate in household’s decisions, such as income use or children’s education. We include these variables in our analysis not only to see how empowered women are in this dimension, but also to analyze whether this usual way to approach women’s empowerment does help us to explain domestic violence. Our attempt is to analyze these different dimensions of women’s empowerment, and see which ones help us better explaining the experience of domestic violence.

⁹Table A.3 shows that the main reasons women reported to have thought about getting divorced are partner’s infidelity (10%), aggressive behavior from the partner (8%) and partner’s alcohol consumption (7%).

Table 3 shows the descriptive statistics of each of the measures used in the factor analysis. Around 50% of women expressed to be satisfied with themselves, and 58% strongly disagrees about the use of domestic violence. Interestingly, only 18% of women strongly disagrees with the statement that a good wife has always to obey her partner. This latter figure may be suggesting that in rural settings, the male dominant role in the household is still a social norm. Regarding intra-household decision making, more than 80% of women say they participate in household decisions. The majority of women actively participate in the productive organization, 38% are leaders, while 71% take part in the decision process. Also, a large share of women is a source of information for other members of the community and of the organization. We also include a variable indicating whether or not women have thought about getting a divorce, 22% of our sample have thought about divorcing.

Table 4 shows the rotated factor loadings for the different measures of women’s empowerment. We worked with the four factors which eigenvalues were strictly larger than one¹⁰. The first factor loads mainly on the measures characterizing women’s self-esteem and disagreement towards domestic violence (rows a to e and r). Factor 2 loads mainly on those variables describing intra-household decision making (rows f to k). Factor 3 loads primarily on the variables characterizing women’s role in the organization (rows l to n). Finally, factor 4 loads on variables describing whether the woman is a source of information in the community (rows o to q). Each of these factors describes a different dimension of women’s empowerment, allowing us to explore the sensitivity of the relationship with domestic violence.

To provide a general overview of how empowered women are in each of the dimensions found through the factor analysis, Figures 2, 3, 4 and 5 show the Kernel distributions of each factor of empowerment. Figures 2 and 4 show that in the dimensions of self-esteem and role in the productive organization, women are relatively evenly distributed. Regarding the dimension of participation in household decision making (Figure 3), there is very little variation and the majority of women have an average level of empowerment. While, for the dimension of social network (Figure 4), the majority of women have relatively low levels of empowerment.

The second factor analysis corresponds to the one on domestic violence. Table 5 shows the descriptive statistics for the different episodes of domestic violence that were asked in the survey. Based on figures from our sample, approximately 20% of women have experienced episodes of emotional violence, such as being accused of being unfaithful, being humiliated or being controlled by their partners. Around 10% of women have experienced physical violence, or have been threatened of physical or psychological abuse. Only 3% of women have experienced sexual violence. According to the Demographic and Health Survey (DHS) of 2010 in Colombia, [Ojeda et al., 2011], around 32% of women reported to have received some kind of threat from their partners. Threat to leave them for another woman, to take away their children or to take away economic support. This figure is higher the older women are, being 27% for women 15 to 19 years of age, and 34.3% for women 45 to 49 years of age.

¹⁰Factor 1 and 2 had an eigenvalue of 3 and explained 17% of the variation. Factor 3 had an eigenvalue of 1.8 and explained 10% of the variation. And Factor 4 had an eigenvalue of 1.5 and explained 8% of the variation.

Regarding physical violence, 37.4% of women have experienced any type of physical violence, and 9.7% have experienced sexual violence. As in the case of threat of violence, rates increase the older women are. For sexual violence, the rate is 5% for women 15-19 years of age, while it is 13% for women 45 to 49 years of age. Finally, around 65% of women have experienced some type of control behavior from their partners, such as accusing them of being unfaithful, limiting contact with family and friends, ignoring them, or not taking them into account for meetings and household decisions.

We consider that the rates of domestic violence in our sample can be lower, as compared to the latest figures from the DHS in Colombia, because of the following reasons. First, our sample only includes 6 out of 32 departments in Colombia¹¹, plus we are working with a sample of households that belong to productive organizations. This brings some selection issues that need to be acknowledged. If we look at the rates of domestic violence reported at the DHS, only for the departments we have in our sample, the rates of threat of violence, physical violence and sexual violence are not particularly different from the national figures¹². This may be suggesting that selection is more an issue of women's characteristics. Second, when working with this kind of sensitive topics, issues of under-reporting and measurement error can arise. Finally, for the particular case of physical violence, the DHS survey includes a much larger list of episodes as compared to our list¹³. Despite the differences, previous evidence reveals that women in Colombia, are highly exposed to domestic violence, physical and emotional. Rates of physical violence in Colombia are among the largest in the region. The highest rate of physical violence is observed in Bolivia (53%), followed by Colombia and Peru (39%) [Bott et al., 2012]. These figures point out that domestic violence is an important issue that can endanger women's well-being and development.

Table 6 shows the rotated factor loadings for the different ways of domestic violence. We worked with the two factors which eigenvalues were larger than one¹⁴. Factor 1 loads essentially on the aggressive and physical ways of domestic violence, such as being humiliated, being threatened physically and psychological, and being actually hit (rows d to l). The second factor loads mostly on controlling ways, such as being accused of infidelity and being controlled by their partners (rows a to c).

As we previously stated, the aim of this paper is to analyze the relationship between women's empowerment and domestic violence. For this, we not only use different measures of women's empowerment and domestic violence, based on the factor analysis previously done. We also include a set of household and individual characteristics that the theories, as well as the empirical evidence, have shown to be correlated with domestic violence. Sociological

¹¹Boyaca, Caldas, Cundinamarca, Huila, Risaralda and Tolima

¹²The rate of threat of violence in the 6 municipalities is 32%, of physical violence 38% and of sexual violence 11%.

¹³We decided not to include as many episodes of physical violence because on one hand, we wanted to have enough time for the other questions asked in the section. On the other hand, after discussing with the research team, we considered that including many episodes of physical violence could make women feeling uncomfortable.

¹⁴Factor 1 had an eigenvalue of 4.3 and explained 48% of the variation. Factor 2 had an eigenvalue of 1.24 and explained 14% of the variation

theories have pointed out that women's and partners' resources are important at determining domestic violence, suggesting that women with higher status in the household are at a higher risk of abuse. This set of theories also suggests that men facing an economic crisis or unemployment, may be more vulnerable to perpetrate abuse [Goode, 1971]. The empirical evidence is mixed and highly inconsistent regarding the relation between women's labor force participation and domestic violence. Some studies find that women's labor market participation is positively associated with domestic violence, while others find a relation in the opposite way [Kishor and Johnson, 2004], [Heisse, 2011]. Based on this set of theories we decided to include a dummy indicating whether or not the women and their partners participate in the labor market. From the psychological side, exposure to violence and poor parenting in childhood can influence the likelihood of future violence. This influence can be through modeling or through the negative impacts on child development [Dutton, 1995]. [Pollak, 2002] proposed an inter-generational model of domestic violence. One of the assumptions of this model is that individuals who grew up in violent homes tend to marry individuals who grew up in violent homes. Motivated by this evidence, we include a dummy indicating whether or not women witnessed domestic violence during childhood.

Last report from the Demographic and Health Survey for Colombia (2010) [Ojeda et al., 2011], shows that women living in de-facto unions or in rural areas are more exposed to domestic violence. The likelihood of having experienced any type of controlling behavior from the partner, such as limiting the contact with family and friends or accuse her of being unfaithful, is 64% for women in de-facto unions, 54% for married women, 67% for women living in rural areas and 60% for women living in urban ones. Although the laws of many countries recognize de-facto unions, civil and agrarian law does not seem to provide the same benefits to women in this type of union¹⁵. Therefore, we may think that outside options for women in a de facto union are not the same as for married women. This could make them more vulnerable to experience domestic violence when partners consider their position in the household is threatened [Kishor and Johnson, 2004]. Based on this, we also include in our analysis a variable that indicates whether a woman is in a de-facto union. Following this idea that men exercise violence when their position in the household is threatened [Macmillan and Gartner, 1999], [Jewkes, 2002]; and use violence to leverage the bargaining power within the household [Bloch and Rao, 2002], [Eswaran and Malhotra, 2011]. We also include a dummy for rural areas, where traditional gender roles seem to be more present.

One set of economic theories predict that an increase in women's reservation utility leads to a decrease in domestic violence [Farmer and Tiefenthaler, 1997], [Tauchen et al., 1991]. These models predict a decrease in domestic violence as women's income increases (eg. partners can buy less violence). [Tauchen et al., 1991] predicts that an increase in the woman's income is going to lead to a decrease in violence, while a rise in the husband's income leads to an increase. Having this in mind, we include in our analysis women's and partner's income and education.

In different cross-sectional studies, evidence has shown a positive and significant correla-

¹⁵Taken from http://www.fao.org/docrep/u5615e/u5615e03.htm#P457_72830 on June 12th, 2015

tion between number of children and risk of physical violence. Some authors have interpreted these results by suggesting that women with young children may be more willing to stay in a violent relation because they are afraid they cannot raise their children alone [Heisse, 2011]. Based on this, we include not only the number of children within the household, but also the total household size. We can think that in larger households domestic violence may be less likely to happen because there can be more witnesses. We also include women’s and partner’s age, as well as age at starting the union. Empirical evidence has shown that in relations where age gaps are larger domestic violence is more likely to occur [Heisse, 2011]. Finally, we include the household land size as well as the assets they have in 2008 (eg. before receiveing Oportunidades Rurales), as proxies for household’s wealth.

Before characterizing the relationship between women’s empowerment and domestic violence. We provide some descriptive analysis based on some of the households and individual characteristics listed above. Table 7 shows that women in rural areas are indeed more likely to experience domestic violence. Women in rural areas are more likely to be humiliated, to be treated bad when they ask for money, and to be forced to do things they did not want in the intimacy. 20% of women has been humiliated by their partners in rural settings, as compared to 10% in urban ones. In households where the partner and the woman work, women are less exposed to a controlling behavior from their partners. Particularly, they are less exposed to limited contact with family and friends, as well as to being constantly asked about where they were and with whom. Finally, women who have been witness of domestic violence during childhood are more exposed to have been forced to do things they did not want in the intimacy. For many of the other characteristics we do not observe significant differences. Notably for women’s education, a variable commonly used to measure bargaining power, we find no significant correlations. These patterns go in line with some, but not certainly all of, previous empirical evidence; and their underlying economic and sociological theories. [Pollak, 2002], [Goode, 1971].

3 Results

3.1 Main Results

Table 7 shows that some of these variables do correlate to certain questions on domestic violence, but certainly not in a very systematic way.

To characterize the relation between women’s empowerment and domestic violence based on the different latent measures we found through our factor analysis, we estimate Equation 2.

$$DV_{ij} = \alpha + \beta_1 F1_j + \beta_2 F2_j + \beta_3 F3_j + \beta_4 F4_j + \beta_5 X_j + \epsilon_j \quad (2)$$

Where DV_{ij} corresponds to the measure of domestic violence given by factor i ($i=1,2$) for woman j . F_i_j corresponds to the measure of empowerment given by factor i ($i=1,2,3,4$) for woman j . X_j represents a set of individual and household characteristics, such as household

size, household head age and education, assets owned in 2008, dummy for rural area, land size, woman’s age, education and income, woman’s age at starting the union and previous experience of domestic violence, and a dummy indicating whether partner and woman work. Finally, ϵ_i is the error term.

Table 8 shows the results for aggressive ways of domestic violence (Factor 1) and Table 9 shows the results for controlling behavior from the partner (Factor 2) . In both tables, the first column corresponds to the specification with all the four factors of empowerment; the second column to the specification including the four factors of empowerment and woman’s income and education; the third column to the specification with all individual and household characteristics except woman’s income and education; and the fourth column to the specification with the whole set of individual and household characteristics (X_j). Table 8 shows that Factor 2 and 4 of empowerment are not significantly correlated to domestic violence. Factor 1 and 3 are positively correlated, and magnitudes are similar. An increase of 1 standard deviations in women’s empowerment, proxied by their role in the productive organization, is associated with a 0,15 standard deviations increase in the likelihood of experiencing aggressive domestic violence; such as being humiliated or being hit or pushed by their partners. An increase of 1 standard deviations in women’s empowerment, proxied by self-esteem, disagreement towards domestic violence and willingness to get divorced, is associated with a 0,13 standard deviations increase in aggressive domestic violence.

We do not find that reported participation in household decision making significantly correlates to domestic violence. We may think that women’s participation in intra-household decisions may not be accurately measured, as it is usually asked. On one hand, the decisions spheres that are usually asked do not necessarily precisely capture women’s autonomy. Perhaps, participation in decisions on how to invest family savings, or whether or not to sell a family asset can tell more about women’s decision power. On the other hand, it is difficult to establish whether sole or joint, with the partner, decision making implies more bargaining power. As we saw, the majority of women take jointly decisions with their partners. This latter set of results go in line with what has been found by [Almas et al., 2015], who have shown that most women report to take decisions jointly with their partners, leaving limited variation to observe changes in empowerment, proxied by household decision making. And [Peterman et al., 2015], who show that women’s status, proxied by household decision making, changes according to how the question is framed.

Regarding the individual and household characteristics included in our analysis, a larger household size is correlated with lower levels of domestic violence, while a larger number of children is positively correlated. Empirical evidence has shown that women living with children can be more prone to violence, because they are more afraid of leaving the relationship. The presence of one more child in the household is associated with an increase of 0,13 standard deviations in experiencing domestic violence. Women living in rural areas appear to be more subject to abuse. Living in a rural area is correlated with an increase of 0,3 standard deviations in experiencing aggressive ways of domestic violence. Contrary to what previous studies have found, we do not find that having experienced or witnessed violence as a child is positively and significantly correlated to domestic violence. We may think that the

variable may not be accurately measured as there may be lack of recalling, or that we are not necessarily capturing the severity of violence experienced.

Reading previous results can raise the question of what is the role played by women’s income and education, which are the common and usual ways to approach women’s empowerment and/or women’s reservation utility. We consider that women’s education and income are not only proxies of women’s empowerment, but of many other household and individual characteristics. Results of Table 8 shows that although they are not statistically significant, women’s income correlates positively with domestic violence, while women’s education correlates negatively. This suggests that they can correlate with domestic violence through different channels, rather than only women’s empowerment. Therefore, we decide to use them as covariates instead of including them directly in the factor analysis. In Section 3.2 we provide additional estimations to support this.

Table 9 shows the results for controlling ways of domestic violence, such as being accused of infidelity or being controlled. Contrary to what we found in Table 8, none of the proxies of women’s empowerment help explaining partner’s controlling behavior. Being in a household where both, women and partner, work is associated with a lower exposure to controlling behavior. We can think that partners of women who participate in the labor market are more used to women who go out of the home often, and meet other people; therefore use less controlling behaviors. The participation of the partner and the woman in the labor market, reduces the likelihood of begin controlled in 0,3 standard deviations. When we look at the R2 statistic, we also see that women’s empowerment does not explain controlling episodes of domestic violence. The R2 is 1% as compared to 6% for aggressive ways of domestic violence. Household and individual characteristics appear to contribute much more at explaining a controlling behavior from the partners. On the other hand, a women’s social capital and self-esteem appears particularly predictive of aggressive violence, and explains about as much variation as the other covariates combined.

Results found in this paper go in line with the economic models that predict an increase in domestic violence due to an increase in women’s bargaining power. Still, this is only true when we analyze aggressive episodes of domestic violence. The motives that drive exercising control over the women seem to be different, and more associated to household and individual characteristics. As for the case of aggressive ways of domestic violence, it seems that partners use violence as a way to leverage bargaining power within the household.

3.2 Robustness checks

We also estimate an equation similar to Equation 2 but including women’s income and education inside the factor analysis. Table A.4 shows the results from the factor analysis including women’s income and education. Results show that income and education load on different factors. Women’s income loads on factor 1 and 3 (self-esteem and role in the organization), and women’s education on factor 2 and 3 (Intra-household decision making and role in the organization). In this factor analysis we also included women’s participation in other or-

ganizations, which loads on factors 3 and 4. Table A.5 shows similar results to what we found in Table 8. Women’s empowerment, approached by women’s role in the organization together with income; and self-esteem together with education, are the two dimensions of empowerment positively and significantly correlated to the experience of aggressive episodes of domestic violence.

The factors of women’s empowerment can be correlated among each other¹⁶. A woman who is more self-determined may be more likely to participate in household decision making or to engage in community organizations. To further validate that the factors of empowerment that significantly correlate to domestic violence are women’s self-determination (Factor 1) and role in the organization (Factor 3); we also estimate Equation 2 excluding factor 1 and 3 (Table A.6), and including only factor 1 and 3 of empowerment (Table A.7). Table A.6 shows that even when factors 1 and 3 are excluded, factors 2 and 4 do not seem to substantially contribute to explaining domestic violence. When only factor 2 and 4 are included, they only contribute 1% to explaining the variation in aggressive episodes of domestic violence; while factors 1 and 3 contribute 5%.

4 Conclusions

Experiencing domestic violence has adverse health and socio-economic consequences, not only for the women that experience the violence, but also for the children that witness it. Several empirical studies have tried to understand the socio-economic characteristics that determine being victim of abuse. Women who live in rural areas, who are in a de-facto union, who have experience violence as a child and who have a larger number of children appear to be more exposed to domestic violence. Women’s resources within the marriage play also an important role. Women with higher education as compared to their partners, appear to be more exposed to violence. Economic theory has modeled domestic violence through non-cooperative bargaining models. One set of models have suggested that an increase in women’s reservation utility will generate a decrease in domestic violence; while others have suggested that men use domestic violence to leverage the bargaining power in the household, case in which an increase in women’s reservation utility can lead to an increase in domestic violence.

This paper aims to contribute to the literature by providing descriptive evidence on the relation between women’s empowerment and domestic violence. We make use of a comprehensive gender section designed for this purpose, in which we asked questions on different dimensions of women’s empowerment, as well as on different events of domestic violence. This extensive set of information allows us to test how responsive is the relation between women’s empowerment and domestic violence, based on the way each of them is measured. We implemented a factor analysis to get the different measures of women’s empowerment and domestic violence. Our factor analysis suggests four measures for women’s empowerment, one for women’s self-determination, one for intra-household decision making, one for the role of women in productive organizations, and one last factor for women’s social network. For

¹⁶We performed an oblique rotation in our factor analysis having that in mind.

domestic violence, our factor analysis suggests a first factor for the controlling behavior from the partner, and a second factor for the more aggressive ways of violence.

Our results suggest that the two factors of empowerment that better help explaining aggressive episodes of domestic violence, are the factor describing women's self-determination and the factor describing women's role in a productive organization. None of the dimensions of empowerment we work with, appears to correlate to episodes of controlling behavior from the partner. Socio-demographic characteristics such as living in a rural area and a larger presence of children in the household, are also positively correlated to the experience of aggressive situations of domestic violence.

Results found in this paper go in line with the economic models that predict an increase in domestic violence due to an increase in women's reservation utility. In these cases, partners use violence as a way to leverage bargaining power within the household. We can think that women, who are more self-determined, stand for their rights, are leaders in the productive organizations and take part in decision process, are women who can be seen as a threat for the traditional male dominance in the household. The setting in which we are working is a setting mainly characterize by rural population, where we can think that male dominance is more common. Contrary to what we initially would have expected, reported women's participation in intra-household decisions does not appear to significantly correlate to domestic violence. We interpret this latter result by suggesting that the way the participation in households decisions is usually asked may not be the most accurate way to capture women's autonomy.

To better understand domestic violence and design better social policies, much more analysis is needed. Still, based on our results, we can highlight some important points. We can suggest that including questions referring to women's self-esteem and social capital is important at trying to characterize women's bargaining power. Also, it seems that further analysis is needed to better capture women's decision power in the household; as well as the community characteristics that correlate with domestic violence. Besides, it appears that the correlates of physical and aggressive violence are quite different, as compared to the correlates of partner's controlling behavior. This suggests that they should not be pooled together at the moment to model domestic violence.

Finally, while the results in this paper are clearly not causal, the positive relationship between different measures of women's participation in different organizations and aggressive domestic violence, nevertheless provide some reason to pause. Several social programs encourage women to participate in meetings or promote the formation of women's groups. Despite the fact this kind of initiatives are thought to empower women and generate better outcomes for them and their families, policy makers need to acknowledge the un-intended consequences these interventions may have. Economic and sociological theories have pointed out that men can use violence when their dominant role in the household is threatened. A higher participation of women in meetings, or organizations, may constitute a behavior partners does not like or consider menacing; using domestic violence as a way to reaffirm their power within the household.

Tables

Table 1: Sample Size

	Obs
Women who are in a union	268
Women for which I have info on domestic violence and are in a union	267
Women for which I have info on all proxies of empowerment, domestic violence and are in a union	207
Women for which I have info on all proxies of empowerment, domestic violence, HH and individual characteristics and are in a union	204

Table 2: correlates of Index of Domestic Violence

	(1)	(2)
Empowerment Index	0.298**	0.386***
	(0.122)	(0.136)
HH size		-0.018
		(0.03)
Partners' age		0.004
		(0.006)
Assets in 2008 (#)		0.019
		(0.023)
Partner's Educa (Yrs)		0.003
		(0.011)
Rural area		0.193*
		(0.1)
Land size (Hs)		-0.002
		(0.007)
Members under 18 y.o		0.046
		(0.04)
Partner's Income (Ln)		0.004
		(0.018)
Woman's age		0.005
		(0.007)
Age at starting the union		-0.001
		(0.008)
Member		0.08
		(0.079)
Experience violence as a child		0.131
		(0.107)
De-facto union		0.076
		(0.11)
Woman and partner work		-0.128
		(0.088)
R-square	0.028	0.092
Obs	207	204
Mean		0.000

Note: Standard errors in parenthesis and clustered at the organization level. *** $p < 0.001$ ** $p < 0.05$ * $p < 0.1$. Factor 1 refers to self-esteem and disagreement to domestic violence. Factor 2 describes intra-household decision. Factor 3 characterize women's role in the organization. Factor 4 describes women's social network.

Table 3: Descriptive Statistics: Measures of Women’s Empowerment

	Mean	Obs
Are you satisfied with yourself? (strongly agrees)	0.480	204
You can do things as good as others (strongly agrees)	0.495	204
A good wife has always to obey her husband? (strongly disagrees)	0.181	204
Men have the right to hit their wives (strongly disagrees)	0.588	204
A woman has to stand being maltreated by her partner (strongly disagrees)	0.618	204
Who takes decisions on type of food: only she/she and her partner	0.936	204
Who takes decisions on clothing expenditures: only she/she and her partner	0.887	204
Who takes decisions on education expenditures: only she/she and her partner	0.882	204
Who takes decisions on how to use HH income: only she/she and her partner	0.868	204
Who takes decisions on how to use her income: only she/she and her partner	0.971	204
Who takes decisions on contraceptive methods: only she/she and her partner	0.926	204
Leader in the orga	0.368	204
Takes part in the decision process	0.716	204
Attend always to the meetings	0.515	204
Was asked for help by a member of the organization	0.186	204
Was asked for help by the leader of the organization	0.074	204
Was asked for help by other	0.363	204
Willingness to get divorced	0.216	204

Note: Descriptives for the final sample of women I work with (eg. no missing value in any of the variables used in the regression.)

Table 4: Factor Analysis. Women's Empowerment

	Factor 1	Factor 2	Factor 3	Factor 4
a	0.83	0.03	0.03	0.08
b	0.82	0.02	-0.01	0.08
c	0.53	0.00	0.28	-0.16
d	0.74	0.01	0.01	-0.18
e	0.77	-0.08	-0.07	-0.18
f	-0.08	0.60	-0.16	-0.11
g	-0.08	0.69	-0.02	0.10
h	0.11	0.73	0.13	0.11
i	0.00	0.70	0.02	0.07
j	-0.04	0.79	0.02	-0.03
k	0.08	0.63	0.07	-0.04
l	0.16	0.06	0.72	0.12
m	-0.01	0.09	0.80	0.00
n	-0.16	-0.09	0.62	-0.10
o	-0.26	0.05	0.02	0.81
p	0.16	0.06	-0.09	0.70
q	-0.05	0.01	0.21	0.56
r	0.31	0.11	0.14	0.13

Note: Oblique rotation

Table 5: Descriptive Statistics: Domestic Violence

	Mean	Obs
Has accused of being unfaithful	0.172	204
Doesn't allow to meet family and friends	0.098	204
Has insisted in knowing where you are all the time	0.157	204
Has humiliated you	0.176	204
Has threatened to abandon you for another woman	0.098	204
Has treated you bad when you ask for money	0.088	204
Has threatened to hit you	0.083	204
Has pushed you or hit you	0.108	204
Has forced you to do things you didn't want in the intimacy	0.049	204

Note: Descriptives for the final sample of women I work with (eg. no missing value in any of the variables used in the regression.)

Table 6: Factor Analysis: Domestic Violence

	Factor 1	Factor 2
a Has accused of being unfaithful	0.39	0.64
b Doesn't allow to meet family and friends	0.30	0.79
c Has insisted in knowing where you are all the time	0.21	0.79
d Has humiliated you	0.71	0.38
e Has threatened to abandon you for another woman	0.66	-0.03
f Has treated you bad when you ask for money	0.76	0.27
g Has threatened to hit you	0.75	0.23
h Has pushed you or hit you	0.73	0.22
i Has forced you to do things you didn't want in the intimacy	0.80	-0.16

Note: Oblique rotation

Table 7: Domestic Violence and HH Characteristics

	Area			Diff (se)	No	Yes	Partner and woman work	Diff (se)
	Urban	Rural						
Has accused of being unfaithful	0.125	0.193		(0.055)	0.190	0.164		(0.048)
Doesn't allow to meet family and friends	0.078	0.107		(0.044)	0.172	0.068		(0.047)
Has insisted in knowing where you are all the time	0.156	0.157		(0.056)	0.241	0.123		(0.06)
Has humiliated you	0.109	0.207		(0.055)	0.190	0.171		(0.058)
Has threatened to abandon you for another woman	0.063	0.114		(0.041)	0.121	0.089		(0.051)
Has treated you bad when you ask for money	0.031	0.114		(0.038)	0.086	0.089		(0.042)
Has threatened to hit you	0.078	0.086		(0.049)	0.103	0.075		(0.043)
Has pushed you or hit you	0.063	0.129		(0.045)	0.103	0.110		(0.045)
Has forced you to do things you didn't want in the intimacy	0.016	0.064		(0.028)	0.034	0.055		(0.029)
Obs	64	140		204	58	146		204
			Experienced viol as a child				De facto union	
	No	Yes		Diff (se)	No	Yes		Diff (se)
Has accused of being unfaithful	0.138	0.197		(0.048)	0.153	0.200		(0.065)
Doesn't allow to meet family and friends	0.098	0.099		(0.038)	0.097	0.100		(0.051)
Has insisted in knowing where you are all the time	0.150	0.169		(0.051)	0.169	0.138		(0.052)
Has humiliated you	0.165	0.197		(0.062)	0.185	0.163		(0.055)
Has threatened to abandon you for another woman	0.090	0.113		(0.048)	0.097	0.100		(0.041)
Has treated you bad when you ask for money	0.083	0.099		(0.059)	0.089	0.088		(0.041)
Has threatened to hit you	0.053	0.141		(0.067)	0.073	0.100		(0.038)
Has pushed you or hit you	0.083	0.155		(0.061)	0.089	0.138		(0.041)
Has forced you to do things you didn't want in the intimacy	0.023	0.099		(0.039)	0.056	0.038		(0.029)
Obs	133	71		204	124	80		204
			At least 1 member under 18 y.o				Education higher than primary	
	No	Yes		Diff (se)	No	Yes		Diff (se)
Has accused of being unfaithful	0.162	0.176		(0.058)	0.180	0.161		(0.039)
Doesn't allow to meet family and friends	0.103	0.096		(0.05)	0.099	0.099		(0.037)
Has insisted in knowing where you are all the time	0.176	0.147		(0.063)	0.162	0.151		(0.048)
Has humiliated you	0.206	0.162		(0.049)	0.207	0.140		(0.048)
Has threatened to abandon you for another woman	0.059	0.118		(0.042)	0.117	0.075		(0.037)
Has treated you bad when you ask for money	0.118	0.074		(0.044)	0.099	0.075		(0.04)
Has threatened to hit you	0.059	0.096		(0.037)	0.081	0.086		(0.043)
Has pushed you or hit you	0.088	0.118		(0.04)	0.090	0.129		(0.042)
Has forced you to do things you didn't want in the intimacy	0.059	0.044		(0.028)	0.054	0.043		(0.031)
Obs	68	136		204	111	93		204

Note: Descriptives for the final sample of women I work with (eg. no missing value in any of the variables used in the regression.). In bold the differences that are statistically significant.

Table 8: Correlates of Aggressive Ways of Domestic Violence

	(1)	(2)	(3)	(4)
Empowerment (F1)	0.131** (0.065)	0.130** (0.06)	0.120* (0.064)	0.124* (0.065)
Empowerment (F2)	-0.014 (0.043)	-0.007 (0.04)	0.042 (0.04)	0.038 (0.041)
Empowerment (F3)	0.151*** (0.051)	0.148*** (0.052)	0.156*** (0.055)	0.153*** (0.054)
Empowerment (F4)	0.097 (0.07)	0.099 (0.072)	0.111 (0.076)	0.111 (0.076)
Woman's income (Ln)		0.028 (0.029)		0.024 (0.03)
Woman's educa (yrs)		-0.014 (0.012)		-0.017 (0.017)
HH size			-0.097** (0.041)	-0.095** (0.043)
Partners' age			-0.003 (0.008)	-0.002 (0.008)
Assets in 2008 (#)			0.019 (0.042)	0.022 (0.044)
Partner's Educa (Yrs)			0.007 (0.017)	0.017 (0.019)
Rural area			0.282* (0.152)	0.282* (0.153)
Land size (Hs)			0.003 (0.012)	0.003 (0.012)
Members under 18 y.o			0.129** (0.055)	0.131** (0.055)
Partner's Income (Ln)			-0.005 (0.024)	-0.003 (0.023)
Woman's age			0.016 (0.01)	0.013 (0.01)
Age at starting the union			-0.006 (0.012)	-0.004 (0.012)
Member			0.008 (0.115)	-0.003 (0.119)
Experience violence as a child			0.264 (0.196)	0.257 (0.2)
De-facto union			0.121 (0.14)	0.102 (0.143)
Woman and partner work			0.007 (0.125)	-0.008 (0.128)
R-square	0.06	0.07	0.12	0.13
Obs	207	205	204	204
Mean			-0.082	
Test F1=F3 (p-value)	0.76	0.78	0.65	0.72

Note: Standard errors in parenthesis and clustered at the organization level. *** $p < 0.001$ ** $p < 0.05$ * $p < 0.1$. Factor 1 refers to self-esteem and disagreement to domestic violence. Factor 2 describes intra-household decision. Factor 3 characterize women's role in the organization. Factor 4 describes women's social network.

Table 9: Correlates of Domestic Violence: Controlling Behavior

	(1)	(2)	(3)	(4)
Empowerment (F1)	0.044 (0.058)	0.06 (0.061)	0.068 (0.067)	0.073 (0.071)
Empowerment (F2)	0.024 (0.041)	0.025 (0.046)	0.041 (0.043)	0.031 (0.047)
Empowerment (F3)	0.044 (0.074)	0.048 (0.078)	0.011 (0.083)	0.002 (0.086)
Empowerment (F4)	0.085 (0.068)	0.064 (0.071)	0.097 (0.082)	0.094 (0.083)
Woman's income (Ln)		0.029 (0.026)		0.048* (0.028)
Woman's educa (yrs)		-0.016 (0.014)		-0.015 (0.02)
HH size			0.108 (0.07)	0.115* (0.067)
Partners' age			0.018 (0.012)	0.019 (0.012)
Assets in 2008 (#)			0.026 (0.039)	0.03 (0.041)
Partner's Educa (Yrs)			-0.001 (0.02)	0.008 (0.027)
Rural area			0.047 (0.146)	0.051 (0.142)
Land size (Hs)			-0.01 (0.008)	-0.009 (0.008)
Members under 18 y.o			-0.097 (0.091)	-0.092 (0.09)
Partner's Income (Ln)			-0.005 (0.023)	-0.001 (0.023)
Woman's age			-0.015 (0.014)	-0.019 (0.013)
Age at starting the union			0.017 (0.014)	0.019 (0.015)
Member			0.179 (0.122)	0.156 (0.126)
Experience violence as a child			-0.078 (0.13)	-0.087 (0.125)
De-facto union			-0.021 (0.157)	-0.044 (0.162)
Woman and partner work			-0.343** (0.145)	-0.380** (0.15)
R-square	0.01	0.02	0.09	0.10
Obs	207	205	204	204
Mean			-0.002	

Note: Standard errors in parenthesis and clustered at the organization level. *** $p < 0.001$ ** $p < 0.05$ * $p < 0.1$. Factor 1 refers to self-esteem and disagreement to domestic violence. Factor 2 describes intra-household decision. Factor 3 characterize women's role in the organization. Factor 4 describes women's social network.

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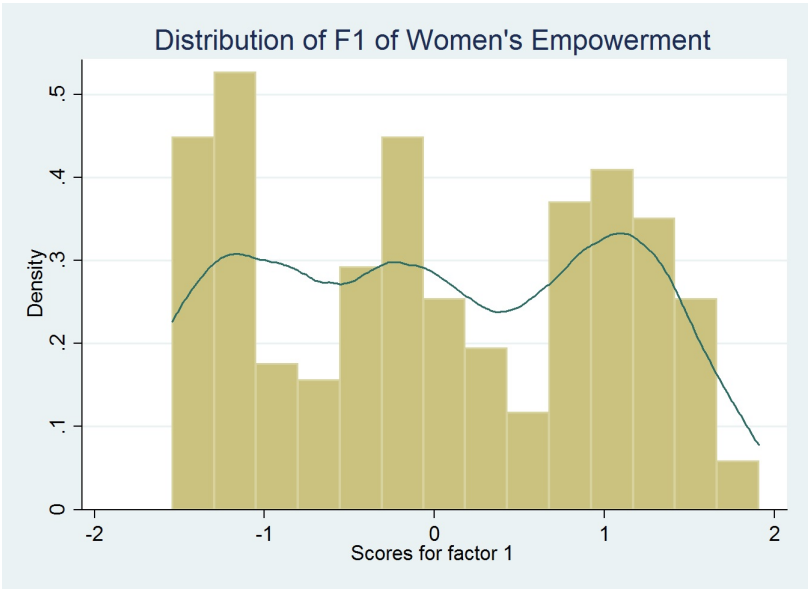
Figures

Figure 1: Domestic Violence and Women's Empowerment



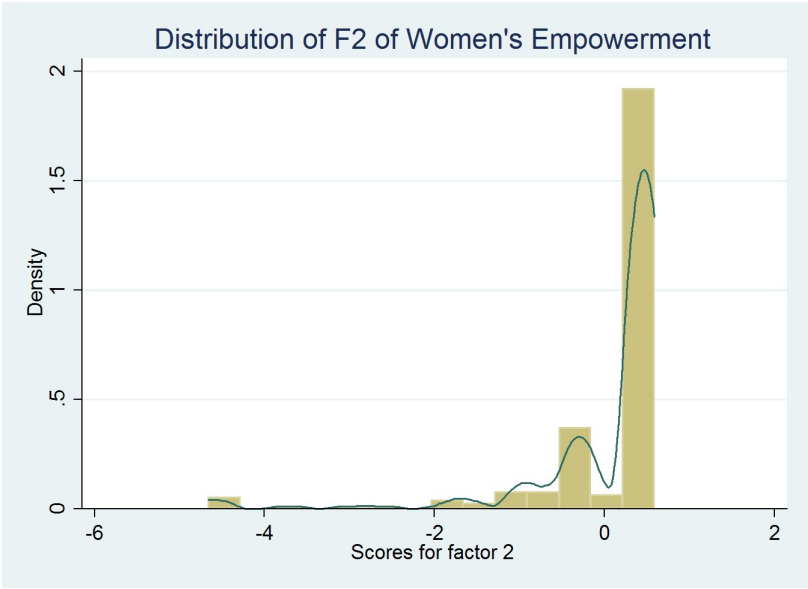
Note: Sample of women who are un a union. Lowess Graph. Kernel Distribution

Figure 2: Distribution Factor 1 of Empowerment: Self-esteem/Disagreement to DV



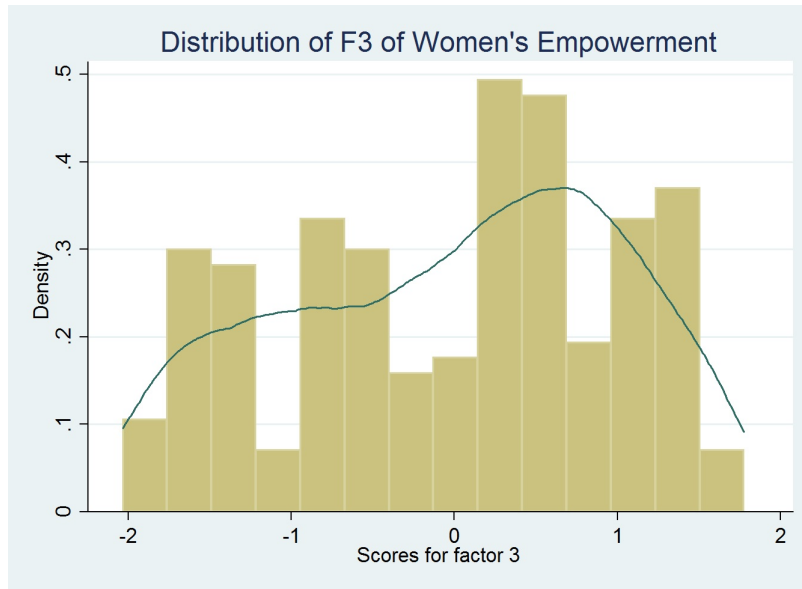
Note: Sample of women who are in a union. Kernel Distribution

Figure 3: Distribution Factor 2 of Empowerment: Intra-HH Decision Making



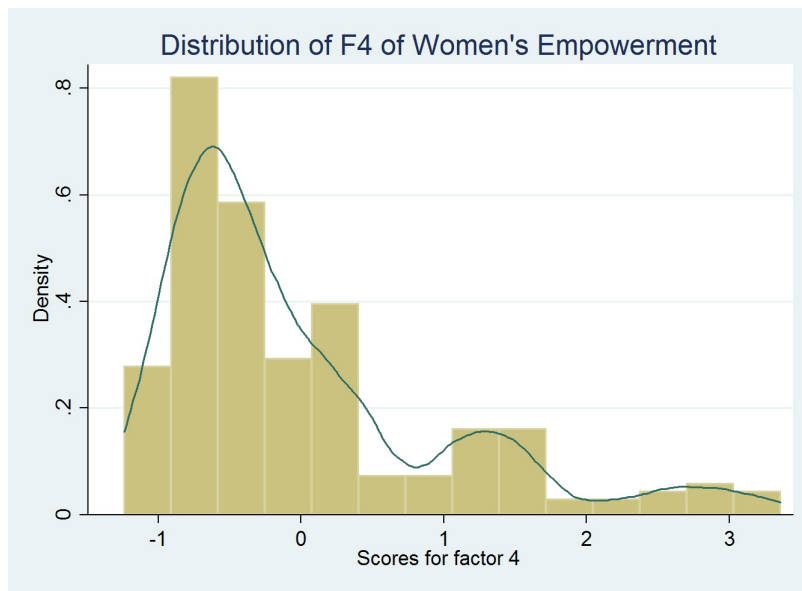
Note: Sample of women who are in a union. Kernel Distribution

Figure 4: Distribution Factor 3 of Empowerment: Role in the Organization



Note: Sample of women who are in a union. Kernel Distribution

Figure 5: Distribution Factor 4 of Empowerment: Diffusion of Information



Note: Sample of women who are in a union. Lowess Graph. Kernel Distribution

A Appendix

Table A.1: Descriptive Statistics on the Whole Sample

	Mean	Obs
HH size	3.919	729
Number of women in the HH	1.857	729
HH head age	50.313	721
HH spouse age	45.475	554
HH head educa	5.610	715
HH spouse educa	6.421	553
Number of children 0-18 yo in the HH	1.021	729
Assets in 2008 (#)	1.053	729
Land size	6.401	729
In union	0.730	722
Answered to gender section	0.392	729

Table A.2: Descriptive Statistics by whether or not they answered to the gender section

	Answered (Yes)	Answered (No)	Difference	SE (Diff)	Obs
HH size	4.122	3.788	0.335	(0.134)	729
Number of women in the HH	1.934	1.808	0.125	(0.084)	729
HH head age	49.454	50.872	-1.418	(0.987)	721
HH spouse age	45.948	45.025	0.924	(1.022)	554
HH head educa	5.740	5.525	0.215	(0.307)	715
HH spouse educa	6.478	6.368	0.109	(0.338)	553
Number of children 0-18 yo in the HH	1.087	0.977	0.110	(0.07)	729
Assets in 2008 (#)	0.836	1.194	-0.358	(0.134)	729
Land size	4.584	7.574	-2.990	(0.876)	729
In union	0.926	0.603	0.323	(0.032)	722

Note: Standard errors in parenthesis

Table A.3: Reasons to have thought about getting divorced

	Rate
Partner does not meet his responsibilities	0.049
Partner's alcohol consumption	0.071
Partner has been unfaithful	0.093
Partner has been aggressive to you	0.078
Partner has been aggressive to children	0.026

Table A.4: Factor Analysis. Women's Empowerment-Including women's income and education inside the factor analysis

	Factor 1	Factor 2	Factor 3	Factor 4
Are you satisfied with yourself? (strongly agrees)	0.03	0.82	-0.01	0.09
You can do things as good as others (strongly agrees)	0.02	0.82	-0.05	0.08
A good wife has always to obey her husband? (strongly disagrees)	0.00	0.53	0.26	-0.16
Men have the right to hit their wives (strongly disagrees)	0.02	0.73	0.06	-0.21
A woman has to stand being maltreated by her partner (strongly disagrees)	-0.07	0.75	-0.02	-0.21
Decision maker on type of food: only she/she and her partner	0.61	-0.08	-0.12	-0.10
Decision maker on clothing expenditures: only she/she and her partner	0.70	-0.09	-0.02	0.08
Decision maker on education expenditures: only she/she and her partner	0.73	0.10	0.15	0.13
Decision maker on how to use HH income: only she/she and her partner	0.70	-0.01	0.01	0.08
Decision maker on how to use her income: only she/she and her partner	0.82	0.00	0.01	-0.04
Decision maker on contraceptive methods: only she/she and her partner	0.63	0.10	0.03	-0.05
Leader in the orga	0.05	0.17	0.68	0.13
Takes part in the decision process	0.09	-0.02	0.77	0.04
Attend always to the meetings	-0.09	-0.17	0.59	-0.19
Leader in other organizations	-0.01	-0.04	0.42	0.41
Woman's income (LN)	0.21	-0.11	0.26	-0.10
Woman's education (years)	0.05	0.23	0.26	0.14
Was asked for help by a member of the organization	0.06	-0.25	0.04	0.78
Was asked for help by the leader of the organization	0.08	0.17	-0.15	0.58
Was asked for help by other	0.00	-0.03	0.21	0.58
Has thought about getting divorced	0.13	0.28	0.14	0.10

Note: Oblique rotation

Table A.5: Correlates of Aggressive ways of Domestic Violence. Factor analysis including women's income and education

	(1)	(2)
Empowerment (F1)	0.131** (0.065)	0.120* (0.064)
Empowerment (F2)	-0.014 (0.043)	0.042 (0.04)
Empowerment (F3)	0.151*** (0.051)	0.156*** (0.055)
Empowerment (F4)	0.097 (0.07)	0.111 (0.076)
HH size		-0.097** (0.041)
Partners' age		-0.003 (0.008)
Assets in 2008 (#)		0.019 (0.042)
Partner's Educa (Yrs)		0.007 (0.017)
Rural area		0.282* (0.152)
Land size (Hs)		0.003 (0.012)
Members under 18 y.o		0.129** (0.055)
Partner's Income (Ln)		-0.005 (0.024)
Woman's age		0.016 (0.01)
Age at starting the union		-0.006 (0.012)
Member		0.008 (0.115)
Experience violence as a child		0.264 (0.196)
De-facto union		0.121 (0.14)
Woman and partner work		0.007 (0.125)
R-square	0.06	0.12
Obs	207	204

Note: Standard errors in parenthesis and clustered at the organization level. *** p<0.001 ** p<0.05 * p<0.1.

Table A.6: Correlates of Aggressive ways of Domestic Violence. Excluding factor 1 and 3 of empowerment.

	(1)	(2)	(3)
Empowerment (F2)	-0.005 (0.04)	0.054 (0.043)	0.049 (0.043)
Empowerment (F4)	0.098 (0.074)	0.109 (0.078)	0.108 (0.078)
Woman's income (Ln)			0.029 (0.03)
Woman's educa (yrs)			-0.012 (0.017)
HH size		-0.078* (0.039)	-0.075* (0.041)
Partners' age		-0.003 (0.009)	-0.002 (0.009)
Assets in 2008 (#)		0.014 (0.043)	0.017 (0.044)
Partner's Educa (Yrs)		0.016 (0.017)	0.023 (0.019)
Rural area		0.311** (0.147)	0.312** (0.149)
Land size (Hs)		0.003 (0.012)	0.004 (0.012)
Members under 18 y.o		0.089 (0.057)	0.092 (0.056)
Partner's Income (Ln)		0.009 (0.023)	0.011 (0.023)
Woman's age		0.014 (0.011)	0.012 (0.011)
Age at starting the union		-0.007 (0.012)	-0.006 (0.012)
Member		0.137 (0.123)	0.119 (0.13)
Experience violence as a child		0.295 (0.202)	0.29 (0.205)
De-facto union		0.086 (0.132)	0.072 (0.135)
Woman and partner work		-0.008 (0.12)	-0.03 (0.124)
R-square	0.011	0.082	0.088
Obs	207	204	204

Note: Standard errors in parenthesis and clustered at the organization level. *** p<0.001 ** p<0.05 * p<0.1.

Table A.7: Correlates of Agressive ways of Domestic Violence. Including only factor 1 and 3 of empowerment.

	(1)	(2)	(3)
Empowerment (F1)	0.133** (0.063)	0.120* (0.062)	0.124* (0.063)
Empowerment (F3)	0.149*** (0.051)	0.158*** (0.057)	0.154*** (0.056)
Woman's income (Ln)			0.028 (0.03)
Woman's educa (yrs)			-0.015 (0.017)
HH size		-0.094** (0.041)	-0.092** (0.042)
Partners' age		-0.004 (0.008)	-0.003 (0.008)
Assets in 2008 (#)		0.017 (0.043)	0.021 (0.045)
Partner's Educa (Yrs)		0.007 (0.019)	0.016 (0.02)
Rural area		0.265* (0.155)	0.267* (0.157)
Land size (Hs)		0.003 (0.012)	0.003 (0.012)
Members under 18 y.o		0.129** (0.053)	0.132** (0.052)
Partner's Income (Ln)		-0.001 (0.025)	0.002 (0.025)
Woman's age		0.016 (0.01)	0.014 (0.01)
Age at starting the union		-0.008 (0.011)	-0.007 (0.012)
Member		0.002 (0.118)	-0.01 (0.122)
Experience violence as a child		0.245 (0.195)	0.239 (0.2)
De-facto union		0.118 (0.144)	0.101 (0.146)
Woman and partner work		0.03 (0.125)	0.01 (0.129)
R-square	0.047	0.105	0.111
Obs	207	204	204

Note: Standard errors in parenthesis and clustered at the organization level. *** p<0.001 ** p<0.05 * p<0.1.