The effect of intimate partner violence on labor market decisions

Evidence from a multi-ethnic country

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Abstract

Purpose – The purpose of this paper is to investigate the heterogeneous labor market responses of indigenous and non-indigenous women to intimate partner violence (IPV) using information from the 2003 Demographic and Health Survey for Bolivia.

Design/methodology/approach – This analysis employs an instrumental variable with a Heckman correction approach to account for possible endogeneity problems between IPV and job exit decisions, and the self-selection of women into the labor force. It also analyses the sample across different population characteristics to search for heterogeneity and potential explanations to the observed effects.

Findings – The results show that the effect of IPV on women's job exits is stronger among non-indigenous women compared to their indigenous counterparts. These differences could be tied to the cultural differences between these two segments of the population. These results are robust using different methodologies and specifications.

Originality/value – To the best of the authors' knowledge, this paper is the first one to compare the relationship between domestic violence and labor market outcomes in a multi-ethnic developing country, such as Bolivia.

Keywords Health policy, Intimate partner violence, Bolivia, Labour outcomes, Domestic violence

Paper type Research paper

1. Introduction

Domestic violence is a very important topic that has been studied mainly by sociologists and criminologists. Domestic violence has long been recognized for its association with serious problems in terms public health, human rights, and social welfare. Women and children are the principal victims of domestic violence (World Health Organization (WHO), 2002). Bolivia is no exception and exhibits high levels of domestic violence[1]. Domestic violence is a serious issue among the indigenous population of Bolivia who generally regard domestic violence as a minor problem. It is considered to be part of the normal interactions that occur within a family; this attitude, as well as the beliefs, traditions, and culture of indigenous populations, has been documented in numerous studies (Albo, 1994; UNICEF, 2012; WHO, 2002).

In developing countries, despite high rates of domestic violence, and intimate partner violence (IPV)[2] in particular, little attention has been focused on analyzing IPV and its consequences for the victims. The literature on the relationship between IPV and labor market outcomes (e.g. wages, labor force participation, and productivity) is relatively thin. Moreover, the existing theories are unclear in their explanations of the relationship and causal direction between labor market outcomes, specifically job exits, and IPV. This makes the analysis of such relationship an empirical question.

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The relationship between IPV and labor market outcomes is very important in Bolivia, not only because of the high levels of IPV, but also because of the differences in how this type of domestic violence is perceived across different segments of the population, specifically cultural differences between the indigenous and non-indigenous communities and between urban and rural areas. For instance, while the Bolivian law has clear punishments for acts of domestic violence (UDAPE-UNICEF, 2008b; UNICEF, 2012), anthropological studies, such as Albo (1994), argue that some levels of domestic violence are, to some extent, socially recognized and accepted within indigenous communities. Domestic violence is often justified as disciplinary action when a member of the household does not conform to their household role (UNICEF, 2012).

One of the factors that affects the perception of domestic violence among indigenous populations is the concept of "community justice." As described by Hammond (2011), community justice is a legal system that operates within indigenous communities and is based on their traditions, culture, and a holistic vision of the community. Under this system, the law is administered not by legal specialists, but rather a male leader elected by the community, or, in cases that involve of serious offenses, the community itself renders legal judgments. Within the framework of the community justice system, domestic violence is often considered a private family matter, and community leaders often do not intervene. If they do intervene, the actions taken are most often toward reconciliation within the household, and punishment is rarely imposed. In addition, community leaders often discourage women from seeking protection from IPV under the ordinary criminal justice system (UNICEF, 2012). Thus, the perception of domestic violence within indigenous communities tends to be more lenient toward the perpetrators of domestic violence, to the detriment of the victims. In the last revision of Bolivia's political constitution, the practice of community justice by the indigenous was formally recognized and accepted as part of Bolivia's legal system (Hammond, 2011). While this form of justice is widely accepted in rural areas, it has been moving into urban areas as a result of high levels of rural-to-urban migration. In contrast, non-indigenous people have no particular bias regarding domestic violence and usually address it using the ordinary criminal justice system.

Within this complex and evolving cultural and legal context, we examine the impact of domestic violence on labor market outcomes, specifically job exits, in Bolivia, a multi-ethnic country, and test for heterogeneous job exiting responses to IPV between the indigenous and non-indigenous populations. While domestic violence can be analyzed from many perspectives, we concentrate on a subset of domestic violence. Namely, IPV in which men (husbands or male domestic partners) are the perpetrators and women (wives or female domestic partners) are the victims. We put forward the hypothesis that indigenous people are less responsive to IPV, compared to their non-indigenous counterparts, when deciding whether or not to participate in the labor market, or, more specifically, whether or not to leave their current jobs as a consequence of IPV. These differences, we hypothesize, may be explained because indigenous women are more likely to view domestic violence as a "normal" behavior, or because social pressures influence victims in indigenous communities to accept IPV as "normal" behavior.

Using statistical techniques we estimate how IPV relates to the decisions of working women to leave their jobs after considering other factors that generally affect female labor market participation. Given the potential endogeneity problem between IPV and employment decisions, we employ an instrumental variable approach using the average incidence of IPV in the region as an instrument that is related to the higher risk of domestic violence in the community but should not affect the probability of leaving a job, other than through the higher incidence of IPV. In addition, we also use a treatment selection model, using factors such as intergenerational violence and acceptance as an exclusion restriction, in order to address the potential endogeneity problem. Our results are consistent with our

expectation of heterogeneous effects of domestic violence among indigenous and non-indigenous women. Even though we find a significant effect of IPV increasing job exits, we also find that indigenous women are less responsive to IPV compared to their non-indigenous peers. This finding is robust to alternative models.

The rest of the paper is organized as follows: Section 2 presents a review of the literature on domestic violence; Section 3 presents the descriptive statistics; Section 4 describes the analytical framework and methodology; Section 5 presents the empirical results, and Section 6 concludes.

2. Literature review

Domestic violence is a complex problem that harms its victims and undermines to household welfare. Although the effects of domestic violence can be analyzed from a number of perspectives (e.g. health outcomes) one of the most important aspects examined in the economic literature has been its relationship to labor market outcomes, such as productivity and employment. This literature has analyzed the relationship between IPV and labor market outcomes from two different perspectives. On the one hand, some research assumes employment status is the exogenous factor, and it assesses the impact of labor outcomes on the incidence of IPV, on the other hand, to which this paper contributes, other research treats IPV as the exogenous factor and assesses its impact on labor market outcomes.

Authors such as Aizer (2010), Bhattacharyya *et al.* (2011), Bowlus and Seitz (2006), and Macmillan and Gartner (1999) have analyzed employment and the generation of income as the triggering factor which might lead to IPV. They explain that the decision to participate in the labor market and obtain the capacity of earn wages are exogenous factors that affect the incidence of IPV in households. They argue that the incidence of domestic violence, its increase or decrease, depends on the bargaining power of the potential victim. On the one hand, when the wife (or female domestic partner) earns resources, she has more bargaining power in the household and becomes more independent, which puts her in a better position to avoid violent situations (Kalmuss and Straus, 1990). On the other hand, when a wife gains more bargaining power in the household, the husband (or male domestic partner) might feel that his role in the household is threatened, and might use coercion (e.g. violence) to force the woman to stop working, and regain his role of provider (Molm, 1997).

The majority of the research reviewed here suggests that women with more resources and wealth are less likely to be victims of domestic violence, and more likely to leave an abusive relationship. Furthermore, we found some evidence that indicates that even the possibility of employment outside the home can provide women with a better bargaining position to reduce the incidence of IPV (Macmillan and Gartner, 1999; Aizer, 2010). However, according to Macmillan and Gartner (1999), the risk of IPV could substantially increase if the husband/partner is unemployed.

A second vein of the literature, to which this paper contributes, analyzes how domestic violence affects the labor outcomes of IPV victims. Authors such as Lloyd and Taluc (1999), Meisel *et al.* (2003), Swanberg *et al.* (2005), and Tolman and Wang (2005) have focused on the effects of IPV on productivity and the work-related decisions of women. These authors argue that IPV might affect the labor market decisions of the victims in at least two ways. First, the perpetrator's actions may interfere with the normal activities of the victim as a result of the use of some type of coercion (e.g. interruptions, harassment, or physical violence). These activities may reduce the victim's work performance, reduce her attendance at work, or increase the employer's cost of keeping her employed, which could translate into fewer hours at work or job termination (Meisel *et al.*, 2003; Swanberg *et al.*, 2005; Tolman and Wang, 2005). The second possible effect is that some women who suffer IPV might be more motivated to participate in the labor market as a way to improve their bargaining power in the household or exit an abusive relationship (Lloyd and Taluc, 1999).

While there is some recent literature that has studied the role of ethnic and cultural differences in the perception of domestic violence (Bent-Goodley, 2004, 2005), the heterogeneity of the impact of IPV on labor market outcomes caused by the differences in the personal and social perception (i.e. between ethnic groups) has received little attention. This paper addresses this gap in the literature. We examine how differing perceptions of domestic violence affect how women (as victims) respond to the experience of IPV, specifically in regard to their labor market participation decisions. Despite the well-documented connection between IPV and labor market outcomes, to the best of our knowledge there are no studies that have attempted to quantify this link within the context of a multi-ethnic country such as Bolivia. Among the few studies that examine the problematic of domestic violence in Bolivia, UNICEF (2012) presented an analysis describing the role cultural differences, with emphasis on indigenous cultures, play in the creation of public health projects and domestic violence protection projects. While UNICEF's analysis emphasizes that official statistics indicate indigenous women are at greater risk of being victims of IPV, it also suggests that IPV, and domestic violence in general, is relatively more "accepted" in indigenous communities[3].

3. Methodology

Ideally, we would like to estimate a probability model (1) to quantify the effect of IPV on the labor outcomes of women, or in this case their employment status:

$$P(\text{work} = 1|X, \text{IPV}) = F\left(X'\beta + \delta \times \text{IPV}\right) \tag{1}$$

Work is a dummy variable that takes the value of 1 if the woman is working, and zero otherwise. Following Killingsworth and Heckman (1986), X is a set of explanatory variables that affect the likelihood of working, including the individual's demographic characteristics, regional fixed effects, husband's work status, and household income level. IPV is a dummy variable that has a value of 1 if the woman reports some level of IPV, either physical or psychological. Assuming that the function $F()$ is a linear probability model (LPM), the parameter δ would capture the effect of IPV on the probability of being employed. Yet, this estimation strategy presents some challenges that need to be addressed.

The first of the challenge presented by this model is that the estimates could be inconsistent as a result of endogeneity problems resulting from reverse causality issues between employment status and IPV. As noted in our review of the literature, some authors indicate domestic violence can be treated as an exogenous factor that impacts labor market decisions, while others argue that labor market status can be treated as exogenous and used to analyze its impact on the incidence of IPV.

Given that the main goal is to analyze the effect of IPV on job market decisions, access to a panel data set would be preferable. This type of data would allow us to distinguish between recent labor force participation changes, or long term employment decisions, as well as short vs long term trends of IPV. In addition, such data would help to better identify a consistent measure of the impact of IPV on employment decisions, by using the changes in IPV and employment status.

In absence of such data, the second best alternative is to restrict the sample to observations where we can identify recent changes on the dependent variable (employment), and analyze it as function of various characteristics including IPV. To such effect, we restrict the sample to observations where women report having been employed at any point during the past year, and use the change in her employment status as the dependent variable. In this case, the dependent variable is defined as a dummy variable that takes a value of 1 if the woman is not currently employed (i.e. left her job) and 0 if she continued to be employed.

We expect that this approach will attenuate some of the reverse causality between IPV and labor market outcomes, as the sample consists of women who already decided to work, but recently left their jobs. The advantage this strategy has over a first difference panel data model is that it would be better identifying the impact of IPV on job exit decisions, which would otherwise be confound with the impact on job entry decisions. We expect that the current change in employment status does not have an effect on the reported incidence of IPV, as the questions in the survey measure medium to long term incidence of IPV in the household[4]. In the empirical specification, instead of analyzing the determinants of their current employment status, we estimate a model that describes the probability of exiting the paid labor force (either due to termination or resignation), among those women who were employed at any point during the previous year. The specification can be written as follows:

$$P(\text{left work} = 1 | \text{work year} = 1,\ X,\ \text{IPV}) = P\left(X'\beta + \delta \times \text{IPV}\right) \tag{2}$$

In addition to the variables previously described, X also includes a variable indicating current pregnancy status, as pregnancy can have strong but separate effect on a woman's decision to leave a job. Although this specification should reduce some of the reverse causality problems described above, endogeneity problems may still occur if unobserved factors that affect woman's labor status changes are also related to the likelihood of being a victim of IPV. To address this problem, we use an instrumental variable approach to consistently estimate the effect of IPV on the decision to work outside the home.

In order to control for endogeneity, the presence of IPV is estimated by applying a LPM as suggested by Angrist and Krueger (1998), using the incidence of IPV in a given geographic area as an instrumental variable. This variable is defined as the ratio of women who reported IPV to the total number of women in a given geographic area[5]. The assumption behind this variable is that the influence of peers, social networks, and the community affects the perception of domestic violence, and specifically IPV, in households. Applying this approach, women living in communities with high levels of domestic violence could face a higher probability of being victim of domestic violence from her partner, which is consistent with the argument that community behavior affects household behavior. This approach also makes the implicit assumption that the incidence of IPV in a geographic area does not directly affect a woman's decision to work, except through her own experience with IPV. In this case, the specification can be written as:

$$\text{IPV} = X'\gamma + Z'\phi + v \tag{3a}$$

$$\text{Left work} = X'\beta + \delta \times \widehat{\text{IPV}} + \varepsilon \tag{3b}$$

where Z is the instrumental variable, incidence of domestic violence in the area.

An additional challenge of the specification presented in Equation (3a) and (3b) is that due to the nature of the labor markets in general, it is likely that there would exist some level of self-selection of women who decide to work in the first place, which has to be controlled for Mroz (1987). In order to simultaneously address both endogeneity and self-selection problems we apply a strategy described in Wooldridge (2010).

Following Wooldridge (2010), the strategy implies to estimate a probit model in the first stage including all the exogenous variables in the model. These include the explanatory variables contained in X, the instrumental variables for IPV Z_1, and variables determining selection Z_2. For our model, we use the number of own children under five, number of own children between 6 and 17 years of age, and the poverty level in the local area as exclusion restrictions. The first two should capture the opportunity cost mothers face when deciding

to participate in the labor market, while the poverty level in the local area should capture the health of the labor demand. Once the probit model has been estimated for the full sample, we calculate the inverse mills ratio and use it to estimate the structural equation by two stage least squares. As argued by Wooldridge (2010), the Inverse mills ratio, depending only on exogenous variables, acts as its own instrumental variable. In this case the model can be written as follows:

$$P(\text{work} = 1) = \Phi\left(X'\gamma_1 + Z_1'\phi_1 + Z_2'\phi_2\right) \tag{4a}$$

$$\text{IPV} = X'\theta + Z_1'\psi + \rho_1 \times \lambda(.) + v \tag{4b}$$

$$\text{Left work} = X'\beta + \delta \times \widehat{IPV} + \rho_2 \times \lambda(.) + \varepsilon \tag{4c}$$

where $\lambda(.) = (\phi(.))/(\Phi(.))$ is the inverse mills ratio estimated based on Equation (4a), and ρ_1 and ρ_2 are the effects that selection has on both determining IPV and its impact on the probability of a woman leaving her job. For the implementation, the full system is bootstrapped for the estimation of consistent standard deviations.

According to Aizer (2010), it is possible that estimates from the previous models could still be biased as they do not take into account the possibility that a woman might leave an abusive relationship. While this is a valid point, in Bolivia, as in many developing countries, divorce carries a strong social stigma that makes the decision to divorce less likely. This should reduce the potential bias associated with this situation in the model.

Based on these specifications, the estimates derived from the proposed models are presented in the Section 5. In the next section, a brief description of the data and summary statistics is presented.

4. Data and statistics

4.1 Data

Our analysis employs data from the Demographic Health Survey (DHS) collected in 2003 for Bolivia[6]. This is a nationally representative survey which gathers information on health outcomes for women and children. The survey collects information from 17,654 women between 15 to 49 years old. The data set contains basic demographic and socioeconomic data for all household members. The main advantage of using this survey is that it provides data on the victims and perpetrators of IPV, which allows us to identify cases of IPV against women. From the entire sample, we limit our analysis to 10,582 women aged 15 years or older who reported currently being in a committed relationship (married or otherwise), and for which information on their partner is available in the data[7]. From this sample, 7,097 women indicate being employed in the previous year and 812 indicate that they left their jobs and are not currently working.

4.2 Descriptive statistics

Tables I and II present descriptive statistics regarding the demographic characteristics and the incidence of domestic violence for the women in our sample across selected groups. On average, 61.5 percent of women in the sample live in urban areas. Their average age is 32.9 years, with 6.9 years of education. Using self-reported information on the language spoken during childhood, 39.3 percent of women are classified as indigenous[8]. In terms of household characteristics, 77.4 percent of the women reported having children six years or older living in the household, and 59 percent stated they have children under the age of 5.

	Full sample	Worked through the year: All who worked	Urban	Rural	Indigenous	Non-indigenous
Age	32.87 (8.48)	33.82 (8.27)	33.76 (8.13)	33.91 (8.51)	34.68 (8.38)	33.20 (8.14)
Education in years	6.93 (4.79)	7.09 (4.98)	8.58 (4.92)	4.55 (3.93)	4.10 (3.53)	9.20 (4.76)
Indigenous = 1	39.3% (0.49)	41.5% (0.49)	28.5% (0.45)	63.5% (0.48)		
HH with children older than 5	77.4% (0.42)	80.4% (0.40)	79.5% (0.40)	81.9% (0.39)	83.7% (0.37)	78.0% (0.41)
HH with children younger than 5	59.0% (0.49)	54.1% (0.50)	49.3% (0.50)	62.3% (0.48)	61.3% (0.49)	49.0% (0.50)
Currently working	59.4% (0.49)	88.6% (0.32)	87.4% (0.33)	90.5% (0.29)	91.4% (0.28)	86.5% (0.34)
Worked through the year	67.1% (0.47)					
Physical violence	51.7% (0.50)	54.6% (0.50)	55.4% (0.50)	53.3% (0.50)	54.6% (0.50)	54.7% (0.50)
Psychological violence	51.6% (0.50)	54.4% (0.50)	55.2% (0.50)	53.1% (0.50)	53.0% (0.50)	55.5% (0.50)
Violence incidence	62.2% (0.48)	65.3% (0.48)	66.3% (0.47)	63.5% (0.48)	63.5% (0.48)	66.5% (0.47)
Accepts violence	23.4% (0.42)	23.3% (0.42)	20.8% (0.41)	27.5% (0.45)	26.2% (0.44)	21.2% (0.41)
Urban area	61.5% (0.49)	62.8% (0.48)			43.1% (0.50)	76.8% (0.42)
Number observations	10,582	7,097	4,458	2,639	2,946	4,151

Source: Own estimations based on Bolivia-DHS 2003

Table I. Summary statistics of wives, by area and ethnicity standard deviations in parenthesis

	Full sample	Worked through the year: All who worked	Suffer violence	No violence	Still working	Left job
Age	32.87 (8.48)	33.82 (8.27)	33.97 (8.22)	33.52 (8.37)	34.34 (8.13)	29.80 (8.26)
Education in years	6.93 (4.79)	7.09 (4.98)	6.90 (4.81)	7.44 (5.26)	7.03 (5.03)	7.51 (4.49)
Indigenous = 1	39.3% (0.49)	41.5% (0.49)	40.4% (0.49)	43.6% (0.50)	42.8% (0.49)	31.2% (0.46)
HH with children older than 5	77.4% (0.42)	80.4% (0.40)	83.1% (0.37)	75.2% (0.43)	82.3% (0.38)	65.1% (0.48)
HH with children younger than 5	59.0% (0.49)	54.1% (0.50)	53.9% (0.50)	54.5% (0.50)	53.4% (0.50)	59.9% (0.49)
Currently working	59.4% (0.49)	88.6% (0.32)	87.5% (0.33)	90.6% (0.29)		
Worked through the year	67.1% (0.47)					
Physical violence	51.7% (0.50)	54.6% (0.50)	83.7% (0.37)		54.2% (0.50)	58.4% (0.49)
Psychological violence	51.6% (0.50)	54.4% (0.50)	83.4% (0.37)		53.8% (0.50)	59.4% (0.49)
Violence incidence	62.2% (0.48)	65.3% (0.48)			64.5% (0.48)	71.3% (0.45)
Accepts violence	23.4% (0.42)	23.3% (0.42)	25.7% (0.44)	18.9% (0.39)	23.1% (0.42)	24.9% (0.43)
Urban area	61.5% (0.49)	62.8% (0.48)	63.8% (0.48)	61.0% (0.49)	62.0% (0.49)	69.2% (0.46)
Number observations	10,582	7,097	4,631	2,466	6,285	812

Source: Own estimations based on Bolivia-DHS 2003

Table II. Summary statistics of wives, by violence and labor outcome standard deviations in parenthesis

From this sample, 7,097 (67.1 percent) women indicated they were employed during the previous year. Compared to the full sample, women who were employed during the previous year are in average one year older, are slightly more educated, with a lower chance of having young children living in their households.

Among women who worked during the previous year, indigenous and non-indigenous women vary substantially in their characteristics. Indigenous women have much lower education (4.1 years) compared to non-indigenous women (9.2 years). Indigenous women are also more likely to live in households with young children (61.3 percent compared to 49.0 percent). Similar patterns can be observed when comparing women living in urban and rural areas. This is expected as the population in rural areas is mainly indigenous.

For the main variable of interest, IPV, and given the nature of the survey, we employ self-reported information on incidents of violent acts[9]. This information could be biased for two reasons: first, the nature of being self-reported information often includes a form of measurement error that could bias our estimates. Second, because women are reporting information regarding a very private aspect of their personal lives, they may tend to under report the incidents of domestic violence. In addition, it is possible that women who have a high degree tolerance for domestic violence (i.e. they accept it as "normal" behavior) could tend to under report the severity or frequency of incidents of violence. Given the presence of both types of bias, we expect our estimates will fall at the lower bound of the overall effect (i.e. the estimates will understate the full impact of IPV).

We identify two different types of violence against women: physical violence and psychological violence. Physical violence is defined as physically aggressive actions committed by their domestic partner (e.g. assault, rape, etc.). Psychological violence identifies domestic partner aggressions such as women being accused of unfaithfulness, demeaning insults, isolation from other family members, threats of leaving the household, or withholding financial support[10]. As we can see on Table I, for the full sample, there is relatively high incidence of physical (51.7 percent) and psychological (51.6 percent) violence. Combining both concepts, the estimates show that 62.2 percent women in our sample have suffered some kind of domestic violence. It is both concerning and interesting to see that 23.4 percent of women perceive domestic violence as behavior that can be justified under certain conditions.

Within the sample of women that worked in the previous year, the incidence of IPV is about 3 percent higher for all definitions of domestic violence. Examining the incidence of violence between indigenous and non-indigenous women in this subsample, we find that indigenous women report a slightly lower incidence of violence (63.5 percent) compared to non-indigenous women (66.5 percent). A similar difference is also observed when comparing the incidence of psychological violence between non-indigenous (55.5 percent) and indigenous women (53.0 percent), whereas the incidence of physical violence is almost the same for both groups. It is important to note that the percentage of non-indigenous women who "accept" domestic violence (21.2 percent) is lower than that for indigenous people (26.2 percent).

When considering the job exit rate, 11.4 percent of women who were working at some point during the previous year left their jobs. This proportion was relatively higher for women living in urban areas than those living in rural areas (12.6 vs 9.5 percent), and higher for non-indigenous than indigenous women (13.5 vs 8.6 percent).

Next we compare groups that experienced domestic violence with those who did not. With respect to age both groups look similar. Women who suffer from some type of IPV have on average about half a year less education. There is a slightly lower share of indigenous women within group that experienced IPV. Women who reported being victims of IPV are 2.9 percentage points more likely to leave their jobs. It is not surprising to see that the ratio of women who "accept" domestic violence is 6.8 percentage points higher among women who experienced IPV.

Finally, it is useful to identify the differences between women who left their jobs and those who did not. The first thing we see is that women who left their jobs were younger (29.8 years) than the average age for the sample (32.9 years); the proportion of indigenous women was lower among women who left their jobs, and their households were less likely to have older children. It also seems that there is a slightly higher rate of women who accept domestic violence among those who left their jobs (25 percent), compared to those who kept working (23.1 percent).

5. Empirical results

Table III presents the results for the baseline model, using alternative methodologies to observe the sensitivity of the results (see Section 3). On column 1, we start by estimating a LPM of probability (LPM) of women leaving their jobs (labor market exit), using a set of

Variables	OLS	Heckman	IV1	IV-Heckman
Age	−0.031 (0.004)***	−0.030 (0.005)***	−0.031 (0.004)***	−0.032 (0.005)***
Years of education	−0.001 (0.001)	−0.001 (0.001)	0.000 (0.001)	−0.001 (0.001)
Currently pregnant	0.082 (0.019)***	0.081 (0.016)***	0.085 (0.019)***	0.086 (0.020)***
Urban area	0.034 (0.011)***	0.034 (0.011)***	0.032 (0.011)***	0.033 (0.011)***
Indigenous	−0.013 (0.011)	−0.012 (0.011)	−0.009 (0.011)	−0.010 (0.013)
IPV	0.033 (0.008)***	0.033 (0.008)***	0.082 (0.023)***	0.079 (0.026)***
Selection term		0.011 (0.055)		−0.011 (0.062)
Constant	0.709 (0.077)***	0.690 (0.120)***	0.682 (0.078)***	0.703 (0.146)***
n	7,097	10,582	7,097	10,582

Notes: Age squared, geographic fixed effects, household income level, and husband-related variables are included but not reported. Robust standard errors in parentheses. For the IV models, we include local incidence of IPV. Full specifications are available upon request. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table III. Probability of leaving the job

standard demographic variables, income level, and a dummy variable for pregnancy status. The model also controls for broad regional fixed effects and variables related to the characteristics of the husband/domestic partner, such as work status, education, and age.

The estimation of this basic model shows that the controls included in the specification have the expected signs. Age is negatively related to labor market exit, which is in line with the evidence found for Bolivia in Landa (2006) (i.e. job stability increases with age). We find that years of education have no effect on the likelihood of women leaving their jobs. We also find that pregnancy has a positive and significant coefficient, which might indicate that either there is a certain level of discrimination against pregnant women (Lai and Stanley, 2005) or that women decide to leave their jobs in the short run to care for a newborn child (maternity leave). The estimates also indicated that the job exit rates are significantly higher in the urban areas (3.2 percent larger), and that indigenous and non-indigenous women are equally likely to exit their jobs, ceteris paribus. Based on this model, the estimates indicate that if a woman is a victim of IPV the probability of her leaving her job increases in 3.3 percentage points.

As described in Section 3, while the basic model provides some important insights on the underlying relationship between IPV and labor market decisions, it does not take into account potential problems of endogeneity or self-selection. Based on the literature review, it is possible that IPV and employment decisions are endogenous given the possible reverse causality problems. In addition, even if IPV were to be considered exogenous, we might still encounter a problem of self-selection, as not all women might decide to ever participate in the job market in the first place. In columns 2-4 of Table III, we estimate three additional models to control for the problems of selection and endogeneity.

In column 2 we estimate a Heckman selection model. For exclusion restrictions, we use the number of children (under and over five years old) as proxy for the fixed cost women face when they decide to participate in the job market, and the poverty rate in the local area as a proxy for the health of the local labor market. Our results show that the selection term is not significant, and there is no observable change in the estimates of IPV.

In column 3, we apply an instrumental variable approach to account for the possible endogeneity problems in the model's specification. As indicated in Section 3, we use the incidence rate of IPV in the local area as instrumental variable, and the results are reported in column 3. Using this instrument we should be able to capture the local treatment effect on households that are influenced by the norms and culture of their communities. Based on this specification, we find that IPV has a much larger effect (8.2 percent) on the probability of a woman leaving her job[11].

In column 4, we apply the preferred a Heckman IV estimation, as it was described in Section 3. This model uses the same exclusion restrictions as the model in column 2, while

using the same instrument as in column 3. Similar to the results comparing the Heckman selection and the LPM, the selection term is not significant and the estimated effect of IPV remains at around 8 percent. In other words, women who suffer IPV are 8 percentage points more likely to leave their jobs.

In order to test the hypothesis of heterogeneous effect of IPV on job exits, we estimate the baseline model for women living in urban and rural areas, and for indigenous and non-indigenous women. Table IV presents the baseline results, and compares the estimates to the instrumental variables and Heckman IV regressions.

Table IV shows that a woman's probability of leaving her job is slightly higher for women who live in rural areas, compared to urban areas. After including instrumental variables, the results indicate that IPV has a large and significant effect on women's job exit probability only in urban areas (10.1 percent). This is probably because the urban labor market is more dynamic (i.e. higher rates of job creation and job destruction) than in the rural labor market. It may also be related to the fact that the influence of community justice is stronger in rural areas which are predominately indigenous. This partially explains the smaller estimates of the effect of IPV in rural areas. Although controlling for selection had little impact on the estimates for the full sample, selection is significant in urban areas. After controlling for selection, the marginal estimates become three times as large, indicating that domestic violence has a larger impact in rural areas (10.3 percent) compared to urban areas (8.5 percent).

Regarding race, the LPM and the IV estimates shows that non-indigenous women have a higher probability of leaving their job if they are victims of IPV (physical and psychological), while indigenous women show smaller and not statistically significant effects of IPV on their job exit rates. The Heckman IV results also show that the marginal effect of IPV is larger among non-indigenous women, albeit the race gap is a smaller. Still, the marginal effect of IPV on indigenous women is only significant at the 10 percent level of confidence. This suggests that indigenous women's decisions to leave their jobs are less affected by IPV. This evidence supports the hypothesis that indigenous women might consider domestic violence a "normal" aspect of marriage or domestic partnership, either due to social pressure or cultural norms.

Since indigenous women are typically characterized as being poorer than non-indigenous women, it is possible that some of the results (e.g. unresponsiveness to IPV) reflect the fact that women in poor households do not have the option to leave their jobs, as they might be one of the primary sources of income in their homes. To test this hypothesis, Table V presents the results for the effect of IPV on labor market exit across the income distribution[12].

The results indicate that the labor market participation decisions of poor indigenous women (quintiles 1-3) are not affected by the incidence of IPV, but that richer indigenous women's decisions are positively and significantly affected by IPV, although only in the LPM specification. For non-indigenous women we find the opposite: poor women ($Q1$-$Q3$) show significant and positive effects, while middle and wealthier segments ($Q3$ and $Q5$) have small and non-significant effects. Non-indigenous women in the fourth quantile also

Variables	LPM	IV	Heckman IV	LPM	IV	Heckman IV
		Non-indigenous			Indigenous	
IPV	0.045 (0.011)***	0.111 (0.032)***	0.088 (0.038)**	0.015 (0.011)	0.041 (0.031)	0.063 (0.038)*
n	4,151	4,151	4,151	2,946	2,946	2,946
		Urban			Rural	
IPV	0.028 (0.010)***	0.101 (0.034)***	0.085 (0.037)**	0.036 (0.011)***	0.039 (0.030)	0.103 (0.038)***
n	4,458	4,458	4,458	2,639	2,639	2,639

Notes: Geographic, income and husband-related variables are included. Full specifications are available upon request. Robust standard errors in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table IV.
Probit model: probability of leaving the Job by area and ethnicity, marginal effects

Table V.
Probability of leaving the Job by ethnicity and income, marginal effects

All	All: *Q*1			All: *Q*2			All: *Q*3			All: *Q*4			All: *Q*5		
	LPM	IV	H-IV	LPM	IV	H-IV	LPM	IV	H-IV	LPM	IV	H-IV	LPM	IV	H-IV
IPV	0.029*	0.005	0.026	0.067***	0.168***	0.184**	0.012	0.082	0.046	0.036**	0.138**	0.117*	0.014	0.015	0.023
	(0.016)	(0.043)	(0.050)	(0.016)	(0.056)	(0.076)	(0.020)	(0.055)	(0.062)	(0.017)	(0.054)	(0.064)	(0.015)	(0.043)	(0.048)
n	1,167	1,167	1,167	1,419	1,419	1,419	1,522	1,522	1,522	1,592	1,592	1,592	1,397	1,397	1,397
	Indigenous: *Q*1			Indigenous: *Q*2			Indigenous: *Q*3			Indigenous: *Q*4			Indigenous: *Q*5		
	LPM	IV	H-IV	LPM	IV	H-IV	LPM	IV	H-IV	LPM		IV		H-IV	
IPV	0.000	−0.004	0.03	0.027	0.087	0.044	−0.018	0.039	0.032	0.042**		0.056		0.002	
	(0.017)	(0.041)	(0.096)	(0.019)	(0.063)	(0.076)	(0.029)	(0.075)	(0.078)	(0.020)		(0.083)		(0.081)	
n	831	831	826	820	820	819	652	652	650	643		643		643	
	Non-indigenous: *Q*1			Non-indigenous: *Q*2			Non-indigenous: *Q*3			Non-indigenous: *Q*4			Non-indigenous: *Q*5		
	LPM		IV	H-IV			LPM	IV	H-IV	LPM	IV	H-IV	LPM	IV	H-IV
IPV	0.108***		0.195**	0.264**			0.032	0.111	0.031	0.038*	0.171***	0.153**	0.007	0.016	0.025
	(0.024)		(0.077)	(0.111)			(0.025)	(0.071)	(0.090)	(0.021)	(0.064)	(0.074)	(0.016)	(0.045)	(0.052)
n	935		935	935			870	870	870	1,125	1,125	1,125	1,221	1,221	1,221

Notes: Similar covariates as in Table III, geographic, regional poverty, income and husband-related variables are included. For Indigenous population we merge *Q*4 and *Q*5 due to small sample. Similarly for non-indigenous populations *Q*1 and *Q*2 are merged; full results for the full specification models are available upon request. Full specifications are available upon request; robust standard errors in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

show large, positive, and significant effects of IPV on their job exit rates. These results suggest that there are two different stories driving the effects of IPV among indigenous and non-indigenous women.

On the indigenous side, it seems that women, from all income levels, are far less sensitive to IPV with regards to their labor market decisions. On the non-indigenous side, at higher income levels, the small and insignificant estimated effects can be explained by three possible factors: a lower incidence of IPV within the higher income groups[13]; women may be more likely to leave an abusive relationship (Bowlus and Seitz, 2006; Aizer, 2010); or greater social pressure associated with the stigma of being an IPV victim. Regarding women in the lowest income quantiles, while the non-responsiveness of indigenous women could be related to the need for them to remain in the labor market and not lose the income they earn, this type of response was not observed among non-indigenous women. This suggests that household income is not the driving factor explaining the unresponsiveness of indigenous women's labor market decisions to IPV, but rather other factors such as the cultural differences.

5.1 Robustness of the estimation: what explains the difference?

As we discussed in the previous section, indigenous women are less responsive in their labor market decisions to IPV than non-indigenous women. In this section, we attempt to identify other factors that explain this finding. In Table VI, we present the baseline Heckman IV model using several subsamples, and including additional explanatory variables, in an effort to find an explanation.

Our first hypothesis is related to women's acceptance of IPV. If women accept IPV as a normal behavior in their relationship, we could expect them to be less responsive than women who do not accept IPV. However, being more accepting of domestic violence, women could either be more susceptible to being a victim of IPV, or be more inclined to leaving their jobs. Using self-reported information on women's perceptions of domestic violence (Table VI: *M*1), we find that women who consider domestic violence as an "acceptable" behavior under certain circumstances are more likely to leave their jobs if they are victims of IPV. Among non-indigenous women, for example, the marginal effect was 0.193 if they "accept" domestic violence compared to 0.06 (not significant) if they do not, supporting the latter hypothesis. The estimates for indigenous women are also positive and significant if they accept domestic violence, but its marginal effect is smaller than the estimates for non-indigenous women.

Another possibility is that women might react differently to IPV depending on their experience with domestic violence during childhood. We estimate separate models for women who witnessed domestic violence in their homes during childhood and for those who did not (Table VI: *M*2). We find that for non-indigenous women, coming from a household with domestic violence has a very small effect on the estimates of the impact of IPV on their decision to exit their jobs (0.108 vs 0.088). For indigenous women, however, those who came from a household with domestic violence are far more sensitive to domestic violence compared to their counterparts (0.136 vs 0.052). Nevertheless, the estimates are only marginally significant.

One characteristic of indigenous women is that they are, in general, less educated than non-indigenous women. It is possible that women's responsiveness to domestic violence is strongly related to their level of education rather than their ethnicity (Table VI: *M*2). When considering women with low levels of education (less than five years), we find that both indigenous and non-indigenous women have similar estimates on the impact of IPV on their exit jobs decisions, albeit the estimate is significant only for indigenous women. Non-indigenous women with average levels of education (6-11 years) show large and significant responses to IPV, whereas indigenous women estimates are not significant. No significant effects are seen for women with 12 years of education or more. This evidence suggests that among women with low levels of education, there are differences in their responsiveness to IPV that are potentially explained by cultural differences.

	Entire sample	Indigenous	Non-indigenous
M0: base line H-IV	0.079 (0.026)***	0.063 (0.038)*	0.088 (0.038)**
M1: acceptance of violence			
Accepts	0.132 (0.049)***	0.104 (0.054)*	0.193 (0.088)**
Does not accept	0.059 (0.031)*	0.016 (0.049)	0.06 (0.041)
M2: intergenerational violence			
Yes	0.082 (0.040)**	0.136 (0.077)*	0.108 (0.055)**
No	0.080 (0.035)**	0.052 (0.043)	0.088 (0.053)*
M3: education			
Less than 5 years education	0.080 (0.037)**	0.094 (0.042)**	0.083 (0.075)
6-11 years of education	0.119 (0.062)*	0.061 (0.077)	0.172 (0.088)**
12 years of education	0.074 (0.070)	0.095 (0.184)	0.052 (0.078)
13+ years of education	0.066 (0.054)		0.066 (0.054)
M4: civil status			
Married	0.074 (0.030)**	0.049 (0.043)	0.083 (0.075)
Living together	0.095 (0.056)*	0.092 (0.089)	0.172 (0.088)**
M5: violence intensity			
No of positive answers	−0.007 (0.026)	−0.02 (0.041)	−0.007 (0.040)
M6: missed work due to violence			
IPV	0.085 (0.027)***	0.068 (0.039)*	0.094 (0.039)**
Missed Worked	−0.045 (0.017)***	−0.048 (0.024)**	−0.047 (0.023)**
M7: someone else hurt her			
IPV	0.078 (0.026)***	0.062 (0.038)	0.088 (0.038)**
Other person hurt	0.028 (0.014)**	0.015 (0.018)	0.037 (0.020)*
M8: violence under drugs or alcohol			
IPV	0.096 (0.034)***	0.091 (0.052)*	0.096 (0.046)**
Under drugs or alcohol	−0.034 (0.019)*	−0.052 (0.030)*	−0.018 (0.024)
M9: husband employment			
IPV	0.096 (0.027)***	0.085 (0.039)**	0.104 (0.039)***
Violence × husband not work	−0.214 (0.138)	−0.177 (0.208)	−0.225 (0.160)

Notes: All regressions follow the base line Heckman IV specification except for *M*4 that is restricted to women who suffered any type IPV. Robust standard errors in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table VI.
Robustness test and different specifications

Women's marital status could affect their responsiveness to IPV because the cost of divorce or separation might be different for married women compared to unmarried women. When estimating the models for these two groups of women (Table VI: *M*4) we find that women who are not married (domestic partners) have a larger positive and significant response to IPV compared to women who are married, although is significant only among non-indigenous women.

An alternative approach is to consider different aspects of how IPV incidents occur. The first aspect is its intensity. Using each variable of physical and psychological violence described in the Table AI, we create an index with an equal weight for each question[14]. The index is transformed into a set of dummy variables indicating if women answered in the affirmative to at least one to four questions' and includes the cumulative positive responses in the baseline regression (Table VI: *M*5). For this model, we limit the sample to women who are victims of IPV. The results suggest that being a victim of IPV is more important than its intensity, since the coefficients associated with intensity are small and statistically insignificant.

Another way to measure the severity of an IPV incident is by observing if the victim had to missing a day's work due to the act of physical aggression (Table VI: *M*6). The results

regarding IPV remain consistent with the baseline estimates. The estimates also suggest that missing a day of work due to an incident of physical IPV reduces the likelihood of a woman exiting her job. This could be an indication that women who suffer from severe physical abuse might try to keep their job as a way to stay away from the house (Lloyd and Taluc, 1999).

In the survey, in addition to information regarding IPV, there is also information regarding the incidence of domestic violence from persons other than the male partner (relative or non-relative) (Table VI: *M*7). Including this as an explanatory variable has little effect on the point estimates, although IPV is no longer significant for indigenous women. We still observe that indigenous women are less responsive to both kinds of domestic violence compared to non-indigenous women.

In an attempt to differentiate the circumstances surrounding the episodes of IPV, we use information on whether or not the domestic partner was under the influence of alcohol or drugs when a violent act was committed (Table VI: *M*8). Alcohol consumption is one of the main causes of domestic violence among indigenous people (UNICEF, 2012). This variable is added as an explanatory variable in the baseline specification. For non-indigenous women, IPV shows no change on its effect compared to the baseline model, and violence while under the influence of alcohol has no significant effect. With respect to indigenous women, while the magnitude of IPV itself is comparable to their non-indigenous counterparts, domestic violence committed while under the influence of alcohol and/or drugs appears with a significant and negative effect, reducing the probability of women leaving their jobs. This could be a reflection of a different household problem, where alcoholism might be diminishing the male partner's capacity to work, thus increasing the need of indigenous women to step up and remain in their jobs.

Finally, it is possible that the husband/partner unemployment is affecting women's decisions to leave their jobs and increasing the likelihood of her being victim of IPV. In addition to control for the husband's employment status (in all models), we also control for the interaction between IPV and the husband being unemployed (Table VI: *M*9). The results are also robust to this additional control, with the estimates associated to IPV being larger for non-indigenous women. As expected, the coefficient of the interaction between IPV and the husband unemployment dummy has a negative impact on the probability of women leaving their jobs. While the magnitude is similar for both ethnic groups, it is not significant for either.

6. Conclusions

In this paper, we analyze the heterogeneous effects of IPV on job exit rates of women in a multi-ethnic developing country. Given the cultural differences between indigenous and non-indigenous people in Bolivia, we hypothesize that indigenous women are less responsive to IPV when they make a decision to leave a job.

Using a binary outcome model, we find that all forms of IPV are positively correlated with higher job exit rates, with non-indigenous women being more responsive than their indigenous counterparts. Using several methodologies to address potential endogeneity and selection problems, we find that our results are robust across the different specifications. Our results indicate that there are unobserved factors, which we attribute to cultural differences, that make indigenous women less responsive to IPV regarding their labor force status.

The policy implications of these findings are that, overall, while for non-indigenous women, sudden job terminations can be use as indicator of IPV, among non-indigenous women, the same signals cannot be directly associated to IPV. In addition, our results also suggest that the consequences of IPV should also be considered based on the conditions surrounding the potential victims. Women coming from specific groups, such as those more accepting of domestic violence, who have experienced domestic violence and less educated women, are the most vulnerable to leave their jobs due to IPV.

Given the differences in responses between indigenous and non-indigenous women, and among different conditions, policies and programs to prevent and deal with cases of IPV must

take into consideration the cultural differences within these two segments of the population. This should be done in consideration that women who leave their jobs are potentially losing one layer of protection, and as such might be less likely seek for help, endangering not only their welfare, but the welfare of other members in the household.

Notes

1. In Bolivia, 83 percent of children are victims of domestic violence at some degree (INE-UNICEF, 2007), while the incidence of violence between partners is about 53 percent (UDAPE-UNICEF, 2008a). Also, according to the Demographic Health Survey 2003 report for Bolivia, at least 54 percent of women declared to have been victims to some kind of psychological violence, while 53 percent declared to be victim of physical violence. This represents one of the highest incidence rates in Latin America (Bott *et al.*, 2012).
2. Domestic violence can be defined as any abusive act inflicted by one member of a household on another member. In contrast, intimate partner violence is defined as an abusive act perpetrated between intimate partners, such as spouses or domestic partners. The literature refers to "intimate partner violence" to distinguish this type of domestic violence from that which may occur between other household members.
3. This is not an isolated characteristic of indigenous communities in Bolivia. On its review of the literature, the report presented by the WHO (2002) indicates that in many developing countries, there is some level of acceptance of husbands having the right to discipline their wives.
4. There is no timeframe is specified regarding this questions in the survey.
5. This variable is constructed using the primary sample unit, the smallest geographical area identified in the survey.
6. Encuesta Nacional de Demografia y Salud (ENDSA) 2003 in Spanish. Details on the survey structure can be found in Gutiérrez Sardán *et al.* (2004).
7. In Bolivia, women can get married starting at 14 years of age (Código de Familia Ley 996).
8. Following the literature, indigenous people are identified based on the first language learned during childhood. Albo and Molina (2006) established that for Bolivia this measurement is accurate and highly correlated to other alternatives such as self-identification.
9. The definitions and identifications of physical and psychological violence can be found in Table AI.
10. The survey questions used for the identification of both types of IPV are described in Table AI.
11. For the instrumental variable approach, the Wald exogeneity test is not significant, indicating that our instrument is exogenous in the analysis, for this sample. The first step regression also showed that the instrument is highly significant and correlated with IPV.
12. Because there is no household income information in the DHS, we use the income quintile classification created for the full sample rather than a specific one for our sample.
13. While 49.35 percent of indigenous women in the highest quintile are victims of IPV, the incidence rate is lower among non-ingenuous women (36.89 percent).
14. The index is the sum of positive responses to domestic examples given during the survey interview. If a woman answers positively in three questions, the index take value of 3.

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Appendix

Variables	Definition
Age	Age of wife in years
Age square	Age square of wife in years
Education in years	Years of educations
Income	Income index 1(poorest) to 5 (richest)
Indigenous = 1	1 if indigenous, identified by language spoken during childhood
No of children older than 5	Number of own children older than 5 years old
No of children younger than 5	Number of own children born in the last 5 years
Worked during the year	1 if wife declare to have worked in the last year
Currently working	1 if wife declare to be working
Husband works	1 if husband works in the labor market
Husband Age	Husband age in years
Husband education	Husband education in years
Physical violence	1 if women reported to have suffered frequently or some times on the following situations spouse ever pushed you spouse ever hit you with his hand/foot spouse ever hit you with something harmful spouse ever tried to strangle you spouse ever forced you to have sex
Psychological violence	1 if women reported to have suffered frequently or some times on the following situations spouse accuses her of unfaithfulness spouse tried to limit her contact with family spouse tells you "you are good for nothing" spouse threatened you with "he will leave the house" spouse tells you "he would not give you economical support"
Urban area	1 if wife lives in the urban areas
Wife violence acceptance	1 if women reported any of the following wife beating justified if she goes out without telling him wife beating justified if she neglects the children wife beating justified if she argues with him wife beating justified if she refuses to have sex with him wife beating justified if she burns the food
Intergenerational violence	1 if women answer positive to: did your father ever beat your mother?

Table AI.
Variable definitions

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