



**“EFFECTS OF DOMESTIC VIOLENCE ON WOMEN'S LABOR OUTCOMES:  
EVIDENCE FROM PERU 2007-2012”**

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**Alumna: Leidy Laura Rueda Sierra**

**Profesor Guía: Fabián Duarte**

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# **Effects of domestic violence on women's labor outcomes: evidence from Peru 2007-2012**

## **Abstract**

This paper examines the impact of domestic violence (physical, sexual and emotional) on indigenous and non-indigenous Women's employment in Peru, where domestic violence levels are the highest in the region. Evidence suggests that the effects of domestic violence are not homogeneous across ethnic groups. Using information from Peru's Demographic and Health Survey (DHS) from 2007 to 2012 and addressing possible endogeneity problems, I find that women's age, years of education, and pregnancy are correlated with the probability of job exit. Being a victim of violence, therefore, increases the probability of job exit by 6.4pp; this effect is statistically significant and, show that violence against women affects their labor market outcomes. However, I also find that indigenous women are 2.1pp less likely to lose or leave their jobs than non-indigenous women when they suffer violence. This paper contributes an understanding of how violence affects women's labor outcomes by taking account differences by area and ethnic group.

JEL Classification: J15, J71

Keywords: domestic violence, labor markets, Peru, ethnicity

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## 1. Introduction

Intimate partner violence (IPV) against women is highly prevalent in Latin American and the Caribbean (LAC) region. A recent comparative study of 12 countries in the region documents that between 8 to 22 percent of women between 15 to 49 years old, experienced partner physical or sexual violence in the previous 12 months<sup>1</sup>. The perpetuation of gender-based violence undermines the achievement of the United Nations Millennium Development Goal focused on promoting gender equality and empowering women. It affects a woman's health and her human rights, as well as the economic development of a country, as women and girls are half of the human capital available to stimulate economic growth and reduce poverty.

Victims of IPV are more likely to have a range of mental health problems, including depression, post-traumatic stress disorder, anxiety, self-harm, and sleep disorders, as well as to present with physical health issues, including poor functional health, somatic disorders, chronic disorders, chronic pain, gynecological problems, increased risk of sexually transmitted diseases and unplanned pregnancies (see Dillon et al. 2013). Economic research has also shown that the adverse mental health effects of traumatic life events have the potential to impact long-term economic outcomes (Gruber, 2004; Gertler et al., 2000; Currie and Tekin, 2006). A recent study by Serbia and Rees (2011) suggests that the depressing effects of forced intercourse victimization diminish the academic performance of young females.

Violence against women also has enormous direct and indirect costs for survivors, employers, and the public sector in terms of health, police, legal, and related expenditures, as well as lost wages and productivity. According to a study in India<sup>2</sup>, a woman loses an average of at least 5 paid work days for each incident of intimate partner violence, while in Uganda, about 9 percent of violent incidents forced women to lose time from paid work, amounting to approximately 11 days a year.

IPV against women can also have a significant intergenerational impact, affecting children's development outcomes through indirect pathways. Children who witness domestic violence are at increased risk of anxiety, depression, low self-esteem, and poor school performance, among other problems that harm their well-being and personal development. In Nicaragua, 63 percent of children

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<sup>1</sup> See PAHO 2012 for a comprehensive documentation of the prevalence of domestic violence against women in LAC

<sup>2</sup> Bhattacharya, Bedi, and Chhachhi (2009). Marital Violence and Women's Employment and property status: Evidence from Indian Villages. IZA working paper 4361.

of abused women had to repeat a school year, and they left school on average 4 years earlier than other children. Children, both girls and boys, who have witnessed or suffered from gender-based violence, are more likely to become victims or abusers later in life.

A nascent body of empirical research has comparably documented the prevalence of IPV and its consequences on women's health for several countries in LAC. These studies report comparative information using multi-country and population-based sample analyses (PAHO 2012; Ellsberg et al. 2008; Hindin et al. 2008).

An important aspect examined in the economic literature is the impact of domestic violence on labor market outcomes, such as productivity and employment. One of the gaps in this literature, however, is that it does not consider possible cultural effects on the impact of violence. The present research aims to contribute to such an understanding of IPV and its effect on women's labor outcomes. The hypothesis of this study is that violence affects the likelihood of job exit, and this effect varies across ethnic groups. By using an instrumental variable approach, endogenous problems could be addressed.

The present study has six sections, including this introduction. Section 2 briefly reviews the literature related to domestic violence, especially in the region, identifying trends, its effects, as well as the factors associated with it. Section 3 describes the database and methodology used to test the hypothesis. Section 4 makes use of Peru's DHS 2007-2012 to estimate the probability of leaving/losing a job, controlling for the variables suggested by the literature. Section 5 presents the results of the model and the analysis, i.e., the empirical validation of the hypothesis that women victims of violence are more likely to leave the labor market. Finally, Section 6 presents the main conclusions and policy recommendations.

## 2. Literature Review

The literature on domestic violence and women's labor force participation has mainly examined the relationship using two different approaches. On one hand, the literature considers employment and income generation as the main factors affecting domestic violence: Gelles (1976), Tauchen et al. (1991), Macmillan, Farmer & Tauchen, and Witte (1995), Gartner (1999), Bowlus and Seitz (2006), Aizer (2007), Bhattacharya et al. (2009), De Simone & Sabia (2011), consider that the decision to participate in the labor market and to generate income influences the incidence of domestic violence in the household.

Non-cooperative family models usefully characterize the behavior of households where violence occurs: Tauchen et al. (1991); Tauchen & Witte (1995), Farmer & Tiefenthaler (1997). In these models, the husband uses violence to induce certain behaviors and increase his utility. External factors such as affective dependence, economic independence and the children, among others, affect the point of threat, and therefore the level of violence that the abused person is willing to tolerate.

According to Kalmuss and Strauss (1990) the bargaining power and the roles of household members affect the potential victim's decision resources as well as the incidence of violence in the household. The authors explain that women who have more decision power in the household and are more independent are in a better position to avoid violent situations. As Molm (1997) suggests, when the wife gains this power, the husband might feel that his position is threatened, and he might use coercion (violence) to regain his position. However, women with more resources and wealth are less likely to remain in an abusive relationship, or present relatively lower rates of domestic violence. Therefore, the high correlation that exists between social status, income, and violence is important in the analysis. Macmillan and Gartner (1999) and Aizer (2007) also find that the potential employment status can work as a signal for reducing the incidence of domestic violence. Macmillan and Gartner (1999) explain that labor force participation can reduce the risk of violence if the husband is also employed, but the risk could increase if he is unemployed.

In contrast, Tauchen et al. (1991) and Farmer, Tauchen, and Witte (1995) have found no evidence that employment status has any effect on domestic violence. According to this literature, changes in the incidence of domestic violence affect changes in the situations of the household members, particularly of the victims (wives). This implies that those changes are exogenous shocks. However, as the second strand of the literature emphasizes, labor market decisions can also be affected by the presence of

domestic violence. This situation complicates the analysis since both variables might be affecting each other simultaneously, and the net effect of the violence would be more difficult to identify.

On the other hand, the literature suggests that domestic violence affects labor outcomes and the participation of victims in the labor market. Lloyd (1997); Franzway (1998); Seitz (1998); Lloyd and Taluc (1999); Meisel, Chandler and Reinzi (2003); Swanberg and Logan (2005); Tolman & Wang (2005) analyze the effects of domestic violence on the performance, productivity, and work-related decisions of the victims. They find that violence could affect labor decisions in two possible ways. First, the victimizer can interfere with the normal activities of the victim using coercion, interruption, harassment or physical violence. These activities might reduce the victim's work performance, reduce her attendance, or increase the costs of hiring her, which could directly translate into fewer hours at work or even termination. Second, women who suffer from domestic violence are likely to try more actively to get away from home, and going out to work is one way to do so. Although the latter might initially be reflected in higher levels of labor force participation, in combination with the former, these authors show it could translate to higher levels of job instability and job termination rates.

Under this approach, the empirical evidence shows that domestic violence is negatively correlated with earnings and positively related to job exit. Women who suffer violence exhibit higher rates of unemployment in the past (Lloyd, 1997; Lloyd and Taluc, 1999). Women who are victims of domestic violence present lower rates of employment or work for fewer hours (Meisel, Chandler and Reinzi, 2003; Swanberg and Logan, 2005; Tolman and Wang, 2005).

## **2.1. Regulation**

Prior to 1990, women's rights in the United Nations were recognized only generally by the inclusion of the principle of equality and non-discrimination in initiatives and treaties, and by the creation of instances, programs, agreements, or specific conventions (Kouvo, 2005). Under the interpretation and application of the general human rights treaties or under the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW, 1979), for example, violence in all its forms was a central issue of the human rights agenda.

In 1992 the CEDAW Committee created General Recommendation No. 19, which states that violence is a form of discrimination which "seriously affects the enjoyment or exercise of the rights and freedoms on the basis of equality with men". From this point, the issue became more prevalent. In

1993, the Declaration on the Elimination of Violence against Women officially recognized the right of women to live free from violence, and in 1994, the Inter-American Convention was created to prevent, sanction, and eradicate violence against women (Convention of Belém do Pará).

In Peru, there have been important policy advances to prevent, punish, and eradicate domestic violence. For example, the issuance of Law No. 26260 against family violence (1993) and its subsequent amendments, such as to include sexual violence as a form of family violence; the ratification of the agreements of the Convention of Belém do Pará (1994); and the approval of Law No. 28592 (2005), which recognized the victims of terrorist violence that occurred in the country between 1980 and 2000 and gave priority to the issue of rape and sexual violence against women.



### **3. Data and Statistics**

#### **3.1. Data**

For the purpose of this study, I used information from Peru's Demographic Health Survey (DHS)<sup>3</sup>, for the period 2007-2012. The survey is annual and nationally representative of both metropolitan and urban-rural areas. The questionnaire collects data about the characteristics of Peruvian women of fertile age (15-49 years old), such as indicators of maternal and child health, history of births, preferences on fertility, nuptiality, knowledge about family planning methods and sexually transmitted diseases, among others. This information is complemented by a series of socioeconomic indicators of the household and information for all the household members.

The main advantage of using this survey is that it also collects and provides information on women victims of violence and their victimizers, where the two are married and/or living as a couple. This allows for a focus on the incidence of domestic violence among a subsample of 80,569 women aged 15 years old and older who declared to be in a committed relationship (married or living in union with some partner), and who worked during the year previous to the survey.

These respondents were asked whether in the 12 months prior to the survey (as an indicator of recent violence), or sometime during a previous relationship, their partner had exerted physical, sexual or emotional violence on them. Specifically, whether they had been pushed, shaken, slapped, had their arm twisted, struck with a fist or an object that could hurt them, had something thrown at them or if they had been physically forced to engage in non-consensual sex. The respondents were also asked whether the husband or partner became jealous or upset if she talked with another man, if he frequently accused her of being unfaithful, if it prevented her from visiting friends, if he tried to limit visits or contact from her family, if he always insisted on knowing where she was going or if distrusted her with money. Finally, they were asked if they had ever been put in humiliating situations by their partner, such as saying or doing things to humiliate her in front of others, and if the partner had threatened her or someone close to her with harm, or to leave home, or to remove children or financial support.

##### **3.1.1. Incidence of violence**

IPV against women is widespread in Latin America and the Caribbean, specifically sexual and emotional violence, including recent violence (during the 12 months preceding the interview) or

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<sup>3</sup> Encuesta Demográfica y de Salud Familiar (ENDES) in Spanish.

sometime during the relationship with the previous partner (between 2007 and 2012). Peru is one of the countries with the highest rates of violence against women in the region. Between 45.4% and 48.6% of Peruvian women ever married or living with a partner have been victims of at least one type of violence at some point in the relationship.

As shown in Table 1.1, using data from the Peru's DHS, there is a considerable percentage of women who reported violence at some time in the different years of the survey. High rates demonstrate that violence is a persistent problem in the country, even though levels of violence against women have been declining in recent years. In the case of women who report having been victims of violence by their husband ever, the proportion of those who suffered physical violence is the highest, while women who reported experiencing violence in the past 12 months show higher levels of emotional violence.

**Table 1.1. Incidence of violence in Peru, 2007-2012, by year**

	Ever				Past 12 months			
	Physical Violence	Sexual Violence	Emotional Violence	Any violence	Physical Violence	Sexual Violence	Emotional Violence	Any violence
ENDES								
2007/2008	40.60%	10.47%	33.99%	48.63%	14.55%	4.05%	17.05%	22.45%
ENDES 2009	39.77%	9.43%	33.79%	48.50%	14.75%	3.83%	18.05%	23.35%
ENDES 2010	38.84%	8.95%	31.89%	46.61%	13.70%	3.61%	16.53%	21.47%
ENDES 2011	39.31%	9.80%	32.63%	47.33%	12.98%	3.55%	16.65%	21.33%
ENDES 2012	37.55%	9.16%	31.05%	45.42%	12.63%	3.49%	16.33%	20.79%

Source: Own estimations based on ENDES Peru

**Table 1.2. Incidence of violence in Peru, 2007/8-2012, by region**

Region	Ever				Past 12 months			
	Physical Violence	Sexual Violence	Emotional Violence	Any violence	Physical Violence	Sexual Violence	Emotional Violence	Any violence
Lima Metropolitana	32.84%	5.60%	27.11%	41.02%	11.88%	2.45%	16.11%	20.68%
Resto Costa	33.93%	6.16%	25.73%	40.88%	12.67%	2.99%	15.42%	20.55%
Sierra	38.15%	8.93%	30.15%	45.49%	14.46%	4.32%	16.83%	22.37%
Selva alta	37.50%	7.67%	30.40%	45.48%	15.55%	4.06%	18.65%	24.14%
Selva Baja	40.75%	8.9%	33.02%	48.02%	17.92%	4.57%	20.15%	26.7%

Source: Own estimations based on ENDES Peru

By region, Selva and Sierra regions respectively, are those with the highest levels of violence against women: 48% of interviewed women aged 15-49 years old living in Selva Baja declared being victims of any type of violence by their last partner, while their counterparts in the Costa region present the lowest rates in the period 2007-2012. Both regions are those with the highest proportions of households in rural areas (Sierra 60.9% and Selva 57.4%). Additionally, they have the greatest incidence of poverty (38.5% and 32.5%<sup>4</sup> respectively) and are located far from economic centers.

### **3.2. Descriptive Statistics**

For this analysis I considered some characteristics of these women<sup>5</sup> such as age, education years, ethnicity, age at first marriage, as well as some characteristics of their households, such as the number of children under 5 years old living at home, household size, income, and labor market status (employed or unemployed at the time of the interview).

According to estimations in Table 2.1, 59.70% of women in the sample were living in urban areas; these women are (on average relatively young (33 years) and with low levels of education (8 years of schooling). Women's age at first marriage is on average 19 years. Considering ethnicity (based on the language learned during childhood and spoke Quechua, Aymara or other), 12.3% of women are classified as indigenous.

Looking at the characteristics of their households, on average, women's household size is 5, with 57.8% of the women declaring they have children aged five years or younger. With respect to labor market status, 66.7% of women were working at the time of the interview.

Some characteristics vary across indigenous and non-indigenous people; indigenous women have (on average) lower education (4 years) than non-indigenous (almost 9 years). Indigenous women live in households with more children under five years old compared to non-indigenous. The percentage of indigenous women who were working at the time of the interview was 83.8%, which is higher than for non-indigenous (64.1%). First marriage age for non-indigenous women is higher than for indigenous women.

By area, there are differences in characteristics such as the number of years of education, the

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<sup>4</sup> Instituto Nacional de Estadística e Informática- INEI (2012) Evolución de la pobreza monetaria en el Perú.

<sup>5</sup> From the entire sample, a subsample was extracted of 80,569 women aged 15 years and older who declared being married or living together with a partner (in a committed relationship). So, the analysis is constrained to this subsample of women.

proportion of indigenous women living in the area, and others. Women living in an urban area have, on average, more education (10 years) than their counterparts living in rural areas (5 years); there are more indigenous women living in rural areas (29.4%) than in the cities (2.25%). Also, women in rural areas are more likely to live in households with children aged under 5 years old (62.35%), compared to women in urban areas; and the proportion of women working in rural areas (72.6%) is higher than women living in cities (62.7%).

I used the self-declared information from women of IPV. However, this information could be biased due to:

- (i) the under reporting of violence incidence. Women may tend to downplay the incident of violence because they might feel uncomfortable or afraid of declaring it. It is possible that those women who experience high levels of violence could have more acceptance, and they may tend to under-report episodes of violence, because they consider it as normal.
- (ii) the nature of the information (self-reporting, a classical measurement error).

However, results from the DHS provide a reasonably accurate estimation of the incidence of violence because the representativeness of the sample, which is an advantage for this research , since it allows to generalize the sample results to the population of women in the age range established by the survey.

I have identified three different types of violence against women: physical, sexual and emotional violence; combining these three concepts, I compute a measure of violence<sup>6</sup>, and the incidence in two periods: the previous year and at any point between 2007 and 2012. The incidence of violence (22.37% for 12 months and 43.35% in the case of ever) is higher in urban than in rural areas, and higher in non-indigenous women than their indigenous counterparts. Physical and emotional violence follows similar patterns, but sexual violence is higher both in rural areas and among indigenous people.

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<sup>6</sup> The definitions of these variables can be found in Appendix 1

**Table 2.1. Summary statistics of wives, by area and ethnicity, Peru 2007-2012**

VARIABLES	Full Sample	Urban	Rural	Indigenous	Non-Indigenous
Age	33.98 (8.55)	34.36 (8.39)	33.42 (8.76)	34.62 (8.71)	33.88 (8.52)
Education in years	8.43 (4.94)	10.07 (4.07)	5.84 (3.86)	4.25 (3.34)	8.99 (4.31)
Indigenous=1	13.20% (0.33)	2.25% (0.14)	29.42% (0.45)		
HH with Children younger than 5	57.81% (0.49)	54.74% (0.49)	62.35% (0.48)	62.18% (0.48)	57.15% (0.49)
HH members	5.10 (2.05)	4.99 (2.05)	5.22 (2.05)	5.42 (2.05)	5.03 (2.05)
Currently working	66.74% (0.14)	62.77% (0.48)	72.58% (0.44)	83.85% (0.36)	64.13% (0.47)
Age at first marriage	19.93 (4.58)	20.65 (4.72)	18.86 (4.13)	18.71 (3.97)	20.11 (4.63)
Violence Incidence last 12 months	22.37% (0.41)	23.6% (0.42)	20.68% (0.40)	20.82% (0.40)	22.63% (0.41)
Physical Violence last 12 months	14.22% (0.34)	14.85% (0.35)	13.36% (0.34)	13.31% (0.33)	14.37% (0.35)
Sexual Violence last 12 months	3.80% (0.19)	3.56% (0.18)	4.12% (0.19)	4.68% (0.21)	3.66% (0.18)
Emotional Violence last 12 months	16.92% (0.37)	18.12% (0.38)	15.37% (0.36)	15.27% (0.35)	17.24% (0.37)
Violence Incidence Ever	43.35% (0.49)	45.19% (0.49)	42.61% (0.49)	43.35% (0.49)	44.24% (0.49)
Physical Violence Ever	35.83% (0.47)	37.48% (0.48)	35.59% (0.47)	35.82% (0.47)	36.84% (0.48)
Sexual Violence Ever	9.60% (0.29)	7.36% (0.26)	8.19% (0.27)	9.60% (0.29)	7.41% (0.26)
Emotional Violence Ever	28.24% (0.45)	29.88% (0.45)	27.75% (0.44)	28.24% (0.45)	29.12% (0.45)
Accepts Violence	5.60% (0.22)	3.86% (0.19)	8.20% (0.27)	8.85% (0.28)	5.11% (0.22)
Urban Area	59.70% (0.30)			10.17% (0.30)	67.22% (0.46)
Observations	80,569	48,097	32,472	10,630	69,887

Standar Deviations in parenthesis

Source: Own estimations based on ENDES 2007/08-2012

**Table 2.2. Summary statistics of women, by violence and labor outcome, Peru 2007/08-2012**

Variables	Full Sample	Report Violence last 12 m	No Violence last 12m	Report Violence Ever	No Violence Ever	Still Working	Lef Job
Age	33.98 (8.55)	32.88 (8.19)	33.78 (8.29)	34.37 (8.09)	32.95 (8.36)	35.14 (8.24)	31.17 (8.49)
Education in years	8.43 (4.94)	8.34 (4.24)	8.38 (4.56)	8.15 (4.36)	8.54 (4.58)	8.29 (4.70)	8.56 (4.10)
Indigenous=1	13.20% (0.33)	20.82% (0.33)	14.04% (0.34)	13.52% (0.34)	13.95% (0.34)	16.53% (0.37)	7.90% (0.26)
HH with Children 5 younger than 5	57.81% (0.49)	61.14% (0.48)	57.5% (0.49)	57.01% (0.49)	59.44% (0.49)	53.57% (0.49)	63.04% (0.48)
HH members	5.10 (2.05)	4.76 (1.78)	4.75 (1.79)	4.79 (1.76)	4.72 (1.81)	5.04 (2.02)	5.20 (2.18)
Currently working	66.74% (0.14)	69.04% (0.46)	66.01% (0.47)	70.5% (0.45)	63.68% (0.48)	-- --	-- --
Age at first marriage	19.93 (4.58)	19.59 (4.39)	20.12 (4.70)	19.58 (4.31)	20.34 (4.85)	20.06 (4.72)	19.43 (4.18)
Violence Incidence last 12 months	22.37% (0.41)	-- --		50.72% (0.49)		23.10% (0.42)	25.54% (0.43)
Physical Violence last 12 months	14.22% (0.34)	63.56% (0.48)		32.24% (0.46)		14.65% (0.35)	16.49% (0.37)
Sexual Violence last 12 months	3.80% (0.19)	16.99% (0.37)		8.62% (0.28)		4.16% (0.19)	4.28% (0.20)
Emotional Violence last 12 months	16.92% (0.37)	75.81% (0.42)		38.45% (0.48)		17.79% (0.38)	18.9% (0.39)
Any Violence Ever	43,35% (0.49)		27.99% (0.44)	-- --		46.53% (0.49)	46.19% (0.49)
Physical Violence Ever	35.83% (0.47)	82.66% (0.37)	23.43% (0.42)	83.17% (0.37)		38.91% (0.48)	38.37% (0.48)
Sexual Violence Ever	9.60% (0.29)	24.53% (0.43)	2.86% (0.16)	17.49% (0.37)		8.71% (0.28)	8.13% (0.27)
Emotional Violence Ever	28.24% (0.45)	81.8% (0.38)	13.76% (0.34)	65.72% (0.47)		31.05% (0.46)	30.52% (0.46)
Accepts Violence	5.60% (0.22)	7.15% (0.25)	5.13% (0.22)	6.74% (0.25)	4.68% (0.21)	5.97% (0.23)	5.53% (0.22)
Urban Area	59.70% (0.30)	61.03% (0.48)	56.92% (0.49)	59.27% (0.49)	56.72% (0.49)	56.21% (0.49)	63.58% (0.48)
Observations	80,569	14,887	51,643	29,346	37,184	53,911	7,657

Standar Deviations in parenthesis

Source: Own estimations based on ENDES 2007/08- 2012

Regarding the variable of interest, labor market outcomes, I find that 12.44% of women who were working in the 12 months previous to the interview left their jobs (7,657 women) during the same time period. This proportion was relatively higher in urban areas compared to rural areas (13.84% versus 10.56%), but also higher for non-indigenous than indigenous women (13.55% versus 6.36%).

With respect to the effects of violence, comparing the groups of women who reported violence in the last year to those who did not (at any point in the time period measured by the survey), the former left their jobs at a rate of 13.5% versus a rate of 12% for the latter.

Women who left or lost their jobs and reported domestic violence were younger (31 years) than women

who kept working (35 years). Women who left or lost their jobs had higher rates of domestic violence in the last 12 months previously to the interview. There is little difference between women who are employed or unemployed and tolerate violence.

#### 4. Methodology

Under the assumption that the utility of working and staying at home can be expressed as linear functions of the household characteristics, this expression could be written as:

$$P(\text{work} = 1) = P(x'B + z'G + V'H + u > 0) \quad (1)$$

V is a binary variable that indicates whether there is incidence of violence against the wife in the household. Following Killingsworth and Heckman (1986), the explanatory set of variables X includes demographic variables (age, age squared, education, and ethnicity) and it is used to estimate the likelihood of working. Also included are region and year fixed effects so as to capture some regional differences in the labor market by department. Also, because it is assumed that job markets differ between urban and rural areas, the estimations use those areas samples separately. I consider different specifications, using the entire sample, differentiating by women's residence and ethnicity.

However, there is a problem with estimating using this baseline model: the coefficient could be biased and inconsistent due to endogeneity problems; as a result of inverse causality issues. To address this problem I used the changes in labor market status as the dependent variable. Moreover, I restricted the sample to those households in which the women were working at some point during the year previous to the interview. Finally, the dependent variable is a dummy that takes the value of 1 if they left their jobs or are not working, and 0 if they stayed working. Addressing the simultaneity between violence and job decision could be done by using the previous approach.

My sample mainly consists of women who were already working; those who have already taken the decision to work. At the same time, assuming that violence is an ongoing situation, it would be expected that the change in job status does not affect the general situation of violence. For that reason, I used a model to estimate the likelihood of women leaving or losing their job during the year of the survey, conditional on declaring to have been employed at least once during the year. The specification that will be used is:

$$P(\text{Left work} = 1 | \text{work year} = 1) = P(x'B + z'G + \delta V + u > 0) \quad (2)$$

Although information for the change in women's job status is available in the database, this is not the case for the incidence of violence which could be a source of endogeneity. I used an instrumental variable approach to solve this problem by creating sufficient exogenous variation to identify the effect



of violence on women's decision to work.

As a first specification, I applied a probit model to estimate the presence of violence. Then, as a second specification, I used an instrumental variable approach (IV) with intergenerational violence (if the women's father ever beat her mother), as an instrumental variable. The assumption is that intergenerational violence does not affect women's decisions to work, but it affects the probability of women suffering violence by their partners because they could be more likely to tolerate violence. In the second stage, the predicted values of the first stage were included to estimate the probability of job exit by using a probit model and using bootstrap technique.

$$P(\text{work} = 1 | \text{work last year} = 1) = P(x'B + z'G + \delta\hat{V} + u > 0)$$

$$V = x'B + z'G + \text{instrument} + e \quad (3)$$

## 5. Empirical Results

Table 3 presents the results for the baseline model, which estimates the probability of women leaving their jobs, including a set of standard demographic variables (state and year fixed effects) as well as variables related to the husband's background, such as his education and age. The first column of Table 3 shows the baseline results without considering any violence controls while columns 2 to 5 include violence variables (total, physical, sexual and emotional respectively).

**Table 3. Probit model: Probability of leaving the Job, marginal effects, Peru 2007-2012**

VARIABLES	(1)	(2)	(3)	(4)	(5)
Age	-0.011*** [0.001]	-0.012*** [0.001]	-0.012*** [0.001]	-0.012*** [0.001]	-0.012*** [0.001]
Age <sup>2</sup>	0.0001*** [-0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]
Years of education	-0.0012*** [0.000]	-0.001** [0.000]	-0.001** [0.000]	-0.001** [0.000]	-0.001** [0.000]
Pregnant	0.095*** [0.0074]	0.094*** [0.008]	0.093*** [0.008]	0.093*** [0.008]	0.093*** [0.008]
No of Children 5 years and under	0.008*** [0.002]	0.012*** [0.002]	0.012*** [0.002]	0.012*** [0.002]	0.012*** [0.002]
No of household members	0.003*** [0.000]	0.004*** [0.001]	0.004*** [0.001]	0.004*** [0.001]	0.004*** [0.001]
Age at first marriage	-0.0002 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]	-0.001 [0.000]
Husband Age	-0.006*** [0.000]	-0.001** [0.000]	-0.001** [0.000]	-0.001** [0.000]	-0.001** [0.000]
Husband years of education	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Indigenous	-0.050*** [0.004]	-0.055*** [0.004]	-0.055*** [0.004]	-0.056*** [0.004]	-0.055*** [0.004]
Urban	0.037*** [0.003]	0.040*** [0.004]	0.040*** [0.004]	0.040*** [0.004]	0.040*** [0.004]
Regional Poverty Level	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]
Any Violence		0.009** [0.004]			
Physical Violence			0.006 [0.004]		
Sexual Violence				0.007 [0.008]	
Emotional Violence					0.008* [0.004]
Observations	51,075	41,974	41,974	41,974	41,974

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The controls included in this baseline model are standard in violence labor market literature, and the coefficients demonstrate outcomes that would be intuitively expected. *Age* is negatively correlated with labor market exit, which is in line with evidence found in Landa (2006).

There is a significant negative effect of *years of education*, which may imply stability of women in their jobs, and that more educated women are less likely to lose their jobs. It is interesting that *pregnancy* has a significant positive effect in the probability of leaving a job, which could show discrimination toward pregnant women or simply that those women chose to take short term maternity leave. The number of children aged under five years old is also positively significantly correlated which suggests some dependence on the care of children.

Regarding the effects of domestic violence on labor market exit, the estimates show that domestic violence (physical, sexual and emotional) increases the probability of women exiting labor markets, confirming the hypothesis. By type of violence, emotional violence is the most significant, which is in line with evidence that suggests emotional domestic violence has a greater effect on working women than physical abuse in terms of job performance (O'Leary, 1999). The measure of violence is also significant, as if women declared themselves victims of physical, sexual or/and emotional violence the likelihood of losing or leaving their jobs increases.

However, since violence could be endogenous to the probability of exit job, an instrumental variable approach may provide a better estimator of the effect of domestic violence on job exit. The results of the regressions in the first stage show that intergenerational violence has a positive and statistically significant effect on suffer violence. Also, taking into account that labor markets are different in urban and rural areas, and for indigenous and non-indigenous groups, I estimated the same model for both areas and ethnic groups. As Tables 4 shows, in the first stage regression, the instrument (intergenerational violence) is significant and correlated with domestic violence, in urban and rural areas and among indigenous and non-indigenous women.

**Table 4. IV Model: First stage, Probability of suffer violence by area and ethnicity**

VARIABLES	Entire sample	Urban	Rural	Indigenous	Non-Indigenous
Age	0.0008 [0.001]	0.001 [0.002]	-0.000 [0.002]	0.001 [0.004]	0.000 [0.002]
Age <sup>2</sup>	-0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Years of education	-0.001*** [0.000]	-0.003*** [0.000]	0.001 [0.000]	0.005*** [0.001]	-0.002*** [0.000]
Pregnant	-0.056*** [0.007]	-0.076*** [0.010]	-0.033*** [0.011]	0.000*** [0.019]	-0.067 [0.008]
Q2	0.013 ** [0.006]	0.038** [0.018]	0.000 [0.006]	-0.012 [0.011]	0.025*** [0.007]
Q3	0.000 [0.007]	0.015 [0.017]	-0.007 [0.010]	-0.056*** [0.024]	0.013 [0.008]
Q4	-0.028*** [0.009]***	-0.004 [0.018]	-0.053*** [0.019]	-0.120 [0.050]	-0.011 [0.010]
Q5	-0.074 [0.010]	-0.042*** [0.019]	-0.052* [0.034]	-0.110*** [0.125]	-0.054 [0.011]
Number of children age < 5 in hh	0.002 [0.002]	0.006 [0.004]	-0.000 [0.004]	-0.006 [0.006]	0.005 [0.003]
Household size	0.001 [0.001]	0.001 [0.001]	0.001 [0.001]	0.003 [0.003]	0.000 [0.001]
Age at first marriage	-0.002*** [0.000]	-0.003*** [0.000]	-0.000 [0.000]	-0.000 [0.001]	-0.002*** [0.000]
Partners age	-0.001** [0.000]	-0.001** [0.000]	-0.001** [0.000]	-0.000 [0.001]	-0.001** [0.000]
Husband education years	0.000 [0.000]	-0.000* [0.000]	0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]
indig	-0.051*** [0.006]	-0.114*** [0.018]	-0.032*** [0.008]		
Urban	0.058*** [0.005]			0.024 [0.019]	0.059** [0.006]
Interg_viol	0.094*** [0.003]	0.091*** [0.005]	0.094*** [0.005]	0.098*** [0.009]	0.092*** [0.004]
Regional Poverty Level	0.001** [0.000]	0.000 [0.000]	0.001** [0.000]	0.000 [0.001]	0.001** [0.000]
_cons	0.214*** [0.047]	0.356*** [0.072]	0.140*** [0.066]	0.139 [0.111]	0.209*** [0.04]
Regional effect	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes
N	47,974	26,611	21,363	7,534	54,905

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4.1. IV Model: Second stage, Probability of leaving the job by area and ethnicity**

VARIABLE	Entire Sample	Urban	Rural	Indigenous	Non-Indigenous
Any violence last 12 months	0.064** [0.032]	0.071 [0.046]	0.036 [0.044]	-0.021 [0.055]	0.073** [0.037]
Woman age	-0.020*** [0.002]	-0.028*** [0.002]	-0.015*** [0.002]	-0.011*** [0.003]	-0.022*** [0.002]
Squared Woman Age	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]
Women single education years	-0.001*** [0.000]	-0.002*** [0.001]	0.001 [0.001]	0.001 [0.001]	-0.001** [0.001]
Currently pregnant	0.110*** [0.008]	0.134*** [0.012]	0.085*** [0.011]	0.065*** [0.016]	0.119*** [0.010]
Q2	0.012** [0.005]	0.002 [0.016]	0.008* [0.005]	0.008 [0.006]	0.007 [0.006]
Q3	-0.005 [0.006]	-0.018 [0.015]	-0.004 [0.008]	0.019 [0.014]	-0.010 [0.007]
Q4	-0.037*** [0.007]	-0.042*** [0.016]	-0.051*** [0.013]	-0.046* [0.026]	-0.040*** [0.008]
Q5	-0.048*** [0.008]	-0.050*** [0.016]	-0.041* [0.023]	-0.087*** [0.029]	-0.050*** [0.009]
Number of children age < 5 in hh	0.010*** [0.002]	0.016*** [0.004]	0.006* [0.003]	0.007 [0.004]	0.012*** [0.003]
Household size	0.005*** [0.001]	0.004*** [0.001]	0.006*** [0.001]	0.003 [0.002]	0.006*** [0.001]
Age at first marriage	-0.000 [0.000]	-0.000 [0.001]	-0.000 [0.001]	-0.001 [0.001]	-0.000 [0.000]
Partner age	-0.001** [0.000]	-0.001* [0.000]	-0.000 [0.000]	-0.001** [0.000]	-0.001* [0.000]
Partner education in single years	-0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
Indig	-0.049*** [0.005]	-0.045*** [0.014]	-0.040*** [0.006]		
Urban	0.047*** [0.005]			0.049*** [0.013]	0.047*** [0.005]
Regional Poverty Level	0.001*** [0.000]	0.001* [0.001]	0.002*** [0.001]	0.001 [0.001]	0.001** [0.001]
_cons	0.399*** [0.039]	0.610*** [0.064]	0.223*** [0.052]	0.224*** [0.075]	0.439*** [0.046]
Regional effect	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes
N	47,974	26,611	21,363	7,534	40,440

Table 4.1. shows that the probability of job exit is higher for women in urban than rural areas, suggesting that the hypothesis of the heterogeneous effects of violence on women in labor markets is

satisfied. This result could be driven by the fact that job dynamics are different across urban and rural areas and across ethnic groups (indigenous and non-indigenous women). Entering and exiting a job is more likely to occur in urban labor markets than in rural ones, probably because of the characteristics of each labor market and because changes in the labor market (job creation and destruction) can occur much more swiftly in the urban labor market than in the rural market<sup>7</sup>. Also, the incidence of violence among indigenous women has a negative effect on the probability of leaving or losing a job. This might be due to the fact that indigenous women are less responsive than their counterpart non-indigenous women in the presence of violence, but the effect is not statistically significant. Otherwise, non-indigenous women show a positive and significant effect of violence (7.3pp) on job exit. The results therefore suggest that if indigenous women are working, they are 2.1pp less likely to leave or lose their jobs if they suffer violence. However, the opposite is true for non-indigenous women, for whom violence has a significant effect on labor market exit.

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<sup>7</sup> Canavire-Bacarreza, G. (2010). Domestic Violence and Labor Market Outcomes. IZA Working Paper.

## **6. Conclusions and Recommendations**

The purpose of this paper is to contribute to generate knowledge on the effects of domestic violence on women's labor market outcomes in a mixed race country such as Peru, by quantifying and analyzing the effects of domestic violence on women's job exit. After controlling for different covariates considered in the literature, I used a probit model and an instrumental variable approach, first using the entire sample, and then by area and ethnic groups, showing differential effects of violence on indigenous and non-indigenous women. I found opposite effects of domestic violence on employment between ethnic groups: for non indigenous women, violence has a positive and significant effect on labor market exit, while for indigenous women violence negatively affects the probability of women exit job.

This study has some limitations related to the underpart of violence and the lack of information on domestic violence found in the DHS and the fact that some questions related to the labor market were not included in this survey, such as the duration of unemployment, causes of job exit, employment of the partner/husband, and individual income. The present analysis focuses on women's job exit, but we cannot separate the effect of losing a job (involuntarily) from that of leaving a job (voluntarily). It would be interesting to analyze the effects of violence on the decision to enter into the labor market and to analyze the effect of violence on men's labor market outcomes.

Cultural definitions of the roles allocated to both men and women in a relationship that they are then expected to comply with include the belief in the inherent superiority of men over women, gender inequality, the notion of the family as a private matter and under male control, and the cultural acceptance of violence as a way to resolve conflicts. These factors are not considered in the DHS survey and can affect the incidence of violence against women by making some women more likely to suffer violence. Therefore, according to the results of this paper, when addressing the impact of violence against women, public policies should take into account such differences on labor market outcomes between violence against indigenous and non indigenous women. The strategies of reducing unemployment, for example, should be differentiated by taking into account these differences.

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# Appendixes

## Appendix 1

### Variable definitions

Variables	Definition
Age	Age of wife in years
Age Square	Age square of wife in years
Education in years	Years of education
Income	Income index 1(poorest) 5 (richest)
Indigenous=1	1 if is indigenous, identified by language spoken during childhood
Number of Children older than 5	Number of own children older than 5 years old
Number of Children younger than 5	Number of own children younger than 5 years old
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 age	Husband age in years
Husband education	Husband education in years
Physical violence	1 if women declared to have suffered ever, frequently or sometimes on the following situations: Her husband pushed her, shook or threw something? Husband slapped her or twisted you your arm? Husband beat her fist or something that could harm her? Husband has kicked or dragged? Husband tried to strangle her or burn it? Husband attacked her or attacked with a knife, gun or other weapon? Husband threatened her with a knife, gun or other weapon?
Sexual violence	1 if women declared to have suffered ever, frequently or sometimes on the following situations: Husband used physical force to force her to have sex even though you didn't want to? Husband forced her to perform sexual acts that you do not approve?
Emotional violence	1 if women declared to have suffered frequently or sometimes on the following situations: Husband has said or done things to humiliate you in front of others? Husband threatened you with harm to you or someone close to you? Husband threatened to leave the house, take the children or financial aid?
Violence	1 if women declared to have suffered ever or last 12 months Physical, Sexual and/or Emotional violence
Urban Area	1 if wife lives in the urban areas
Wife violence acceptance	1 if women declared 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?

## Appendix 2

**Table A2.2. Determinants of Job exit, by area and ethnicity**

VARIABLES	Full Sample	Urban	Rural	Indigenous	Non-Indigenous
Age	-0.012*** [0.001]	-0.016*** [0.002]	-0.008*** [0.002]	-0.007*** [0.002]	-0.013*** [0.002]
Age <sup>2</sup>	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000** [0.000]	0.000*** [0.000]
Years of education	-0.001** [0.000]	-0.002*** [0.001]	-0.000 [0.001]	-0.000 [0.001]	-0.001 [0.001]
Pregnant	0.094*** [0.008]	0.105*** [0.010]	0.073*** [0.009]	0.066*** [0.011]	0.099*** [0.009]
No of Children 5 years and under	0.012*** [0.002]	0.012*** [0.003]	0.010*** [0.003]	0.009*** [0.003]	0.012*** [0.002]
No of household members	0.004*** [0.001]	0.003** [0.001]	0.004*** [0.001]	0.002 [0.001]	0.004*** [0.001]
Age at first marriage	-0.001 [0.000]	-0.001 [0.000]	-0.000 [0.000]	-0.001 [0.001]	-0.001 [0.000]
Husband Age	-0.001** [0.000]	-0.001* [0.000]	-0.000 [0.000]	0.000 [0.000]	-0.001* [0.000]
Husband years of education	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Indigenous	-0.055*** [0.004]	-0.062*** [0.006]	-0.048*** [0.004]		
Urban	0.040*** [0.004]			0.026*** [0.006]	0.044*** [0.005]
Regional Poverty Level	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]
Violence	0.009** [0.004]	0.011*** [0.004]	0.009** [0.004]	0.008* [0.005]	0.012*** [0.004]
Observations	41,974	31,474	28,952	21,420	39,030

## Appendix 3

**Table A3.1. Determinants of Job exit, by Income group**

VARIABLES	Q1	Q2	Q3	Q4	Q5
Age	-0.007*** [0.002]	-0.013*** [0.002]	-0.015*** [0.002]	-0.011*** [0.002]	-0.011*** [0.002]
Age <sup>2</sup>	0.000** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000*** [0.000]
Years of education	-0.003*** [0.001]	-0.003*** [0.001]	-0.003*** [0.001]	-0.003*** [0.001]	-0.003*** [0.001]
Pregnant	0.070*** [0.010]	0.083*** [0.011]	0.093*** [0.011]	0.089*** [0.012]	0.079*** [0.013]
No of Children 5 years and under	0.009*** [0.003]	0.013*** [0.003]	0.014*** [0.003]	0.012*** [0.003]	0.009*** [0.003]
No of household members	0.002* [0.001]	0.003*** [0.001]	0.002 [0.001]	0.002 [0.001]	0.001 [0.001]
Region 2	0.008 [0.012]	-0.003 [0.012]	0.011 [0.014]	0.004 [0.014]	0.011 [0.014]
Region 3	0.003 [0.011]	-0.001 [0.012]	-0.001 [0.013]	-0.006 [0.013]	-0.005 [0.013]
Region 4	-0.027*** [0.010]	-0.033*** [0.010]	-0.019* [0.012]	-0.019* [0.011]	-0.014 [0.012]
Region 5	-0.012 [0.010]	-0.015 [0.011]	-0.019 [0.012]	-0.020* [0.012]	-0.013 [0.012]
Region 6	0.004 [0.011]	-0.009 [0.012]	0.002 [0.014]	0.010 [0.015]	0.002 [0.014]
Region 7	-0.028 [0.018]	-0.039** [0.016]	-0.033* [0.017]	-0.028* [0.016]	-0.020 [0.018]
Region 8	-0.032*** [0.009]	-0.040*** [0.009]	-0.022* [0.012]	-0.026** [0.012]	-0.027** [0.011]
Region 9	-0.033*** [0.008]	-0.035*** [0.009]	-0.030*** [0.011]	-0.033*** [0.010]	-0.030*** [0.010]
Region 10	-0.005 [0.010]	-0.015 [0.011]	-0.002 [0.014]	-0.012 [0.013]	-0.011 [0.013]
Region 11	-0.031*** [0.010]	-0.039*** [0.009]	-0.020* [0.012]	-0.026** [0.011]	-0.021* [0.012]
Region 12	-0.014 [0.011]	-0.018* [0.010]	-0.007 [0.012]	-0.008 [0.012]	-0.007 [0.013]
Region 13	-0.027** [0.011]	-0.034*** [0.011]	-0.026** [0.013]	-0.028** [0.012]	-0.027** [0.012]
Region 14	-0.035*** [0.009]	-0.042*** [0.009]	-0.031*** [0.011]	-0.032*** [0.011]	-0.032*** [0.011]
Region 15	-0.039*** [0.008]	-0.051*** [0.008]	-0.037*** [0.010]	-0.030*** [0.010]	-0.030*** [0.010]
Region 16	-0.029*** [0.008]	-0.024** [0.011]	-0.028** [0.012]	-0.023* [0.012]	-0.022* [0.013]
Region 17	0.002 [0.013]	-0.003 [0.011]	-0.011 [0.011]	-0.021* [0.012]	-0.015 [0.013]
Region 18	-0.034*** [0.009]	-0.045*** [0.009]	-0.013 [0.012]	-0.020* [0.011]	-0.025** [0.011]
Region 19	-0.006 [0.011]	-0.000 [0.012]	0.005 [0.013]	0.008 [0.014]	0.000 [0.013]
Region 20	-0.030*** [0.009]	-0.038*** [0.009]	-0.028** [0.011]	-0.026** [0.011]	-0.022* [0.011]
Region 21	-0.055*** [0.007]	-0.055*** [0.008]	-0.052*** [0.009]	-0.052*** [0.008]	-0.052*** [0.008]
Region 22	0.029** [0.012]	0.027** [0.013]	0.024* [0.014]	0.021 [0.014]	0.024* [0.014]
Region 23	-0.048*** [0.009]	-0.053*** [0.009]	-0.045*** [0.010]	-0.038*** [0.010]	-0.043*** [0.009]
Region 24	-0.041*** [0.009]	-0.044*** [0.009]	-0.023** [0.011]	-0.037*** [0.010]	-0.036*** [0.010]
Region 25	-0.008 [0.012]	-0.001 [0.013]	-0.001 [0.014]	-0.033*** [0.012]	-0.024* [0.013]

Age at first marriage	-0.001 [0.000]	-0.000 [0.001]	-0.001 [0.001]	-0.001 [0.001]	-0.001* [0.001]
Husband Age	-0.000 [0.000]	-0.001 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Husband years of education	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Indigenous	-0.053*** [0.005]	-0.045*** [0.005]	-0.051*** [0.006]	-0.047*** [0.006]	-0.046*** [0.006]
Urban	0.011** [0.005]	0.019*** [0.005]	0.020*** [0.005]	0.013** [0.005]	0.011* [0.005]
Regional Poverty Level	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]	0.002*** [0.000]
Violence	0.009** [0.005]	0.014*** [0.005]	0.012** [0.005]	0.008* [0.005]	0.008 [0.005]
Observations	24,003	24,953	24,521	22,207	20,098