

## **Some Economic Implications of Domestic Violence against Women: A Case of Latin American Countries**

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### **Abstract**

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*Previous research looked at domestic violence as a result of deprivation or unhappiness. In this study, we employ two specifications to examine the effects of per-capita income, literacy rates among women, growth in family size, type of employment by women, the male unemployment rate, level of female compensation, other women labor measures, and proxies for household consumption on domestic violence against women in 15 Latin American countries. Our findings show that per-capita income, literacy rates among women, type of employment by women, and level of female compensation are negatively correlated with domestic violence against women, while growth in family size and male unemployment rate are positively correlated with domestic violence against women.*

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**JEL Classification:** I0, O1, O4

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### **1. Introduction**

Throughout history, women have faced hardship. Women across the world are subjected to varying degrees of persecution, physical assault, and abuse simply based on gender (Bunch 1990). In many cases, this violence can be extreme as in the instances of mutilation and forced prostitution. Other instances of oppression that may not—overall—be quite as egregious can nevertheless have profound and lasting effects on the welfare of the woman. For example, denying access to education and work may leave women susceptible to abusive relationships. This less “dire”—but more insidious—form of violence against females constitutes a direct attack on women’s socio-economic rights. According to Moore (2008), domestic violence against women is a social and human rights issue that many women in nearly every society and culture face.

In the late 1980s and early 1990s, several women’s rights organizations concluded that women’s rights are not separate from human rights (Bunch 1990).

Studies have linked a rise in violence to the destabilizing effects of misguided macroeconomic policies, structural adjustment programs, and globalization. The growing inequalities these seem to have created have been linked to increasing levels of violence against women in several regions, including Latin America, Africa, and Asia (UNICEF, 1989 and Mazumdar et al. 1995). Domestic violence is one of Latin America’s most pressing social problems, as each year between 10 and 35% of Latina women are physically abused by their partners (Buvinic et al. 1999).

Due to its endemic nature, domestic violence perpetrated by a male against his female partner is increasingly being recognized as a human development problem worldwide (Kishor and Johnson 2004). It is also known as spousal abuse, intimate partner violence, and wife battery.

Domestic violence is a multidimensional phenomenon that includes physical, emotional, and sexual violence, as well as stalking. The prevalence of physical domestic violence in different parts of the world has been estimated to range between 13 and 61 percent (Garcia-Moreno 2006).

Domestic violence has cascading negative effects on the economic (Renzetti 2009), physical (Matthew et al. 1996), mental health (DeJonghe et al. 2008), and unintended pregnancy (Pallitto and O'Campo 2004) status of individual victims. Furthermore, Domestic violence has negative consequences not only for the woman subjected to violence but also for the human development of her children (Evans et al. 2008). For instance, Domestic violence is highly predictive of poor child nutrition (Heaton and Forste 2008) and poor cognitive, emotional and behavioral outcomes (Kirtzmann et al. 2003). Huth-Bocks et al. (2001) have shown that children as young as 3 years old who have been exposed directly or indirectly to Domestic violence have lower intellectual abilities relative to those who have not.

According to the United Nations (2005) reports that a common way to organize the economic costs of violence is to place them in categories based on the consequences of violence and the services utilized as a result of violence. Costs can be found in seven major categories: Justice, Health, Social Services, Education, Business Costs, Personal or Household Costs and Intangibles. The report lists the different types of cost associated with domestic violence against women:

- **Direct tangible costs** are actual expenses paid, representing real money spent. Examples are taxi fare to a hospital and salaries for staff in a shelter.
- **Indirect tangible costs** have monetary value in the economy, but are measured as a loss of potential. Examples are lower earnings and profits resulting from reduced productivity.
- **Direct intangible costs** result directly from the violent act but have no monetary value. Examples are pain and suffering, and the emotional loss of a loved one through a violent death.
- **Indirect intangible costs** result indirectly from the violence, and have no monetary value. Examples are the negative psychological effects on children who witness violence that cannot be estimated numerically.

The Inter-American Development Bank (IDB) investigated the socio-economic cost of domestic violence in six countries in Latin America – Brazil, Colombia, El Salvador, Mexico, Peru, and Venezuela (1999). The IDB study suggests that domestic violence poses a number of costs to general welfare. These costs are classified into the following general categories: direct, non-monetary, and those with multiplicative effects (both economic and social). Direct costs may take into account expenditures on many factors: psychological counseling, various types of medical treatments, increased expenditures on police services<sup>1</sup>, costs imposed on the criminal justice system, housing and shelters for women and their children, and social services. Non-monetary costs refer to those that do not draw upon medical services directly, but take a heavy toll on the victim-survivors by way of increased morbidity and mortality through homicide and suicide, increased dependence on drugs and alcohol, and other depressive disorders. These intangible costs are comparable, according to World Bank (2005) estimates, to other risk factors and diseases such as HIV/AIDS, tuberculosis, cancer, cardiovascular disease, and sepsis during childbirth. Economic multiplier effects include, for example, decreased female labor participation, reduced productivity at work, and lower earnings (Morrison and Orlando 1999). They may also have long-term detrimental effects to human capital formation. According to an IDB study in Nicaragua, 63% of children from families in which women are subjected to severe domestic violence repeat a grade at school and, on average, drop out at age 9, compared with age 12 for children of women who are not victims of severe abuse (Hayward 1999). Finally, social multiplier effects include the inter-generational impact of domestic violence on children, erosion of social capital, reduced quality of life, and reduced participation in the democratic process. These effects are difficult to measure quantitatively, but their impact may be substantial.

Poverty may be an especially salient risk marker for abuse in Latin America, where 44% of people live in poverty and 19% live in extreme poverty (Economic Commission for Latin America and the Caribbean 2008). After African countries, Latin American countries have the highest incidents of violence against women. Between 1982 and 2004, 24% of women were assaulted by their partners. In countries like Nicaragua and Peru, the number is 69% and 42% respectively (WHO 2005). The IDB estimates that the cost of violence against women ranges between 1.3 and 5% of GDP in the Latin America region overall, where women victims of domestic violence have lower overall incomes than other women (WHO 2010).

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<sup>1</sup>These may include time spent on arrests and responding to calls.

This represents a regional loss between 1.6 and 2% in wages. The statistics leave no room for doubt: Latin America has the highest violent crime rates in the world. Of the 520,000 homicides committed worldwide in 2000, 140,000 were in this region. The homicide rate, 27.5 per one hundred thousand inhabitants, is triple the world average of that year, 8.8 (Krug et al. 2002).

High levels of violence, a characteristic of the continent, are a disturbing human drama and have far-reaching consequences in the social, institutional and political fields. Violence will also have very significant economic effects, although these have not been so deeply studied. For instance, according to calculations carried out by Londono and Guerrero (1999), violence in Latin America represents a net cost of around 12.1 per cent of the regional GDP, that is, 145,000 million dollars per year.

Interpersonal violence is the third cause of loss of disability-adjusted life years (IBID 2003). This concept includes not only the years lost through premature death, but also those in which the person has been affected by disability or illness. Furthermore, in some countries, victims may not always report certain minor crimes to the police, especially if they consider this body inefficient or corrupt. Thus, the data based on the measurement of these crimes may be underestimated (Salama 2003).

Crime and violence destroy the social infrastructure and, thus, have a negative effect on productivity. The lack of social infrastructure encourages predatory behavior, diverting capital and labor towards unproductive activities, either by engaging in crime-related activities or by protecting human and physical assets. In economies characterized by the illegal redistribution of resources, individuals present unproductive behavior based on rent seeking. This type of behavior is eventually damaging to economic growth (Murphy et al. 1993).

Domestic violence against women is a rather multi-faceted topic. However, our focus is on the economic factors that may be predictive of domestic violence against women in 15 Latin American countries. We will be specifying two models: a benchmark and an alternative. The economic factors that we consider in our benchmark model as determinants of violence against women include per-capita income, female literacy rates, growth in family size, and the percent of females working in industry, male unemployment rates and the level of female compensation. Given that there is no available data for the growth in family size, we use population growth as proxy for the growth in family size.

We believe that, on average, population growth and growth in family size move in the same direction. Further, we place importance on household factors such as household income, the ratio of family resources to needs, and a couple's subjective views on income. We regard literacy rates among women as a tool for increasing human capital and encouraging positive changes at the home. The prospect of persistent unemployment of members of the household serves as a source of frustration and discontent that could be a contributing factor to the incidence of domestic violence.

In our study we provide some insights about the determinants of violence against women in 15 Latin American countries: Barbados, Brazil, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Haiti, Mexico, Nicaragua, Paraguay, Peru, Puerto Rico, and Uruguay. Our emphasis on Latin America is three-pronged. First, there is evidence in the literature that domestic violence is a pervasive and pressing problem in Latin America. For example, each year between 10% and 35% of Latina women are physically abused by their partners (Buvinic et al. 1999). Second, a priori we assume more homogeneity among these countries—relative to the rest of the world—concerning language and colonial origin. These may lead to similarities in social, legal, financial, and economic institutions among these countries. A final practicality is that these countries seem to enjoy a relatively higher degree of availability in data regarding violence. For example, as evidenced by table 1, the World Bank estimates that, as a share of 2007 GDP, the total costs of social violence in some of the countries we study ranged from 5 to 25%.

**Table 1: Economic Costs of Social violence in Six Latin American Countries  
(as% of 2007 GDP)**

	Brazil	Colombia	El Salvador	Mexico	Peru	Venezuela
Health losses	1.9	5.0	4.3	1.3	1.5	0.3
Material losses	3.6	8.4	5.1	4.9	2.0	9.0
Intangibles	3.4	6.9	11.5	3.3	1.0	2.2
Transfers	1.6	4.4	4.0	2.8	0.6	0.3
<b>TOTAL</b>	<b>10.5</b>	<b>24.7</b>	<b>24.9</b>	<b>12.3</b>	<b>5.1</b>	<b>11.8</b>

*Source: World Bank 2007*

The rest of this paper is organized as follows. Section 2 provides a brief review of the literature. Section 3 describes the empirical approach and presents results from two different specifications. Section 4 concludes.

## 2. Contributing Factors to Domestic Violence Against Women

Nearly 80 population-based studies conducted in over 50 countries indicate that between 10 and 60% of women ever married or partnered have experienced at least one incident of physical violence from an intimate partner (Ellsberg and Heise 2005). These authors estimate that between 40 and 75% of women physically abused worldwide report injuries from domestic violence. This physical abuse may often result in bodily injury with gynecological and mental health repercussions, and it may lead to adverse pregnancy outcomes and sexually transmitted infections. Maman (2002) finds that women with violent male partners are at greater risk of HIV infection in Tanzania. Dunkle (2004) extended Maman's findings for South Africa.

Londoño and Guerrero (1999) estimate that the costs of medical attention resulting from violence are as much as 0.2 per cent of the GDP of the region. Public safety expenditure, including prevention campaign costs, would be about 1.1 per cent of the GDP. The expenditure on justice is 0.5 per cent. The cost of all this, will have to be financed by more taxes and, thus, the net earnings obtained will be lower.

While intimate partner violence does not discriminate with regards to social class, Straus et al. (1980) show that violence is more commonly seen among people with low education and income, and among those who are unemployed. Oropesa (1997) shows that increases in educational literacy rates among women and educational attainment increase human capital. He finds that this increase in human capital, in turn, promotes access to economic resources (e.g. wages) by women and allows them to break free from abuse by their male partners. However, research on the relationship between literacy and domestic violence is scarce relative to studies that link educational attainment to intimate partner violence<sup>2</sup>.

A notable exception is Flake (2005), who finds that Peruvian women with a postsecondary education were 26% less likely to experience violence than women with no education, concluding that educated women are typically more autonomous, possessing the resources to recognize and terminate an abusive relationship. In addition, Flake shows that women with a higher education than their partner are 43% more likely to be abused than women with the same educational attainment as their partner. This is explained by theories in power dynamics in which imbalances may lead to violence. More recently, Ackerson et al. (2008) find that Indian women with the highest level of schooling had the lowest percent of intimate partner violence, whereas women with no formal education were over 5 times more likely to report experiencing intimate partner violence within the last year than women with more than 12 years of schooling. They also find that women married to husbands with no formal education were roughly twice more likely to experience partner violence than those whose husbands were college-educated.

At the household level, increases in the population of countries approximate increases in household size, as determined by increases in the number of children. Strauss et al. (1980) found the incidence of domestic violence rises as the number of children grows from zero to five. Vest et al. (2002) found that the presence of children in a relationship is independently associated with a greater likelihood of domestic violence. However, Andersson et al. (2007) did not find a compelling relationship between household size and intimate partner violence.

<sup>2</sup> Studies consistently indicate that as the financial status of a family increases, the likelihood of domestic violence decreases (Benson, Fox, DeMaris, & Van Wyk, 2003; Benson, Wooldredge, Thistlethwaite, & Fox, 2004; Greenfeld et al., 1998; Lloyd, 1997; Raphael, 2000).

Given that it is reasonable to expect jobs in industry and service to provide the prospect of greater earnings than agrarian labor, the type of work performed by women is likely to have an impact on the prevalence of domestic violence. Elliott and Johnson (1995) show that women in rural settings are more likely to be in a physically violent relationship than women in the city.<sup>3</sup>

Using two waves of the National Survey of Families and Households where couples participated, Fox et al. (2002) studied the impact of economic misfortunes on violence against women. They found that unemployment for the male partner for a period longer than six months was found to increase his risk of being violent by 50%. Conversely, when the household income-to-needs ratio was higher, the risk of violence was significantly reduced. They conclude that low income and poverty are among the strongest and most consistent predictors of intimate partner violence. Using comparative resource theory,<sup>4</sup> Kaukinen (2004) confirms that a woman's economic dependence puts her at greater risk of intimate partner violence. Conversely, Fox et al. (2002) comment that when a female contributes more financially than her male partner does, he may become more violent. This is explained by theories of power dynamics, where the male could use violence to balance out some perceived deficiency in the financial contribution to the household. Kaukinen (2004) found that incompatibilities between partners favoring women increase the probability of violence. In the U.S.A, time, domestic violence (DV) agencies began reporting increases in the number of calls they were receiving for help from battered women due to financial strain caused by unemployment (Benson & Fox, 2004).

### 3. Empirical Models

We focus on the effects of per-capita income, literacy rate among women, population growth,<sup>5</sup> the type of employment women are engaged in, male unemployment rates, and level of female compensation on domestic violence against women. Our data set covers annual data from the year 1993 to the year 2014, inclusive. The data for per-capita income, literacy rate among women, population growth, and percentage of females working in industry and service jobs, male unemployment rates, and female compensation levels are collected from the World Bank's World Development Economic Indicators (WDI) database. A measure of domestic violence<sup>6</sup> data is derived from the World Handbook of Political and Social Indicators (2014) and the United Nations Website ([www.un.org](http://www.un.org), 2014) for 15 Latin American countries. This measure represents the percentage of women who, when surveyed, have reported a case of domestic violence at least once in the past year. The average percentage of domestic violence cases for the 15 countries over the 11-year span is 21%. Nicaragua reports the highest average annual incidence rate at about 42% and El Salvador comes down as the lowest with 8%.

#### 3.1 Static Effects

We estimate the following fixed-effects, one-way error component regression models on a panel of 15 countries over 21 years.

$$DV_{it} = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 Literacy_{it} + \beta_3 pop\_Gr_{it} + \beta_4 Industry_{it} + \beta_5 Male\_Unemp_{it} + \beta_6 Comp_{it} + \varepsilon_{it} \quad (3.1)$$

$$\varepsilon_{it} = \nu_i + \mu_{it} \quad (3.2)$$

$$\beta_i = \beta_0 + \beta_7 Z_i \quad (3.3)$$

In regression (3.1)  $DV_{it}$  is the domestic violence coefficient for country  $i$  at time  $t$ .  $GDP_{it}$  is the natural logarithm of per-capita income for country  $i$  at time  $t$ .  $Literacy_{it}$  is the percentage of females ages 15 and above who can read and write a short simple statement on their everyday life for country  $i$  at time  $t$ .

<sup>3</sup> According to these authors, 25% of women living in a rural area reported domestic violence, while only 12% of urban women reported violence.

<sup>4</sup> Resource theory compares resources between partners and assesses their impact on the violence against women. See Goode (1971) who theorizes that women who are most dependent on the spouse for income fear the increased financial burden if they leave their marriage. This leads them to have fewer options and resources to help them cope with or change their spouse's behavior. Conversely, couples that share power equally should experience lower incidences of conflict.

<sup>5</sup> As a proxy for growth in the size of the family.

<sup>6</sup> Domestic Violence is defined as the number women who are the victims of severe assaults by boyfriends and husbands each year, this is the best data available.

The annual population growth rate is denoted by  $pop\_Gr_{it}$ .  $Industry_{it}$  is the proportion of women working in the industrial and service sectors who receive remuneration in wages, salary, commission, tips, piece rates, or pay in kind.<sup>7</sup>  $Male\_Unemp_{it}$  is self-explanatory. Finally,  $Comp_{it}$  consists of all payments in cash, as well as in kind (such as food and housing), to female employees in return for services rendered.<sup>8</sup> In regression(3.3),  $Z_i$  represents unobserved characteristics and  $\beta_0$  and  $\beta_7$  are coefficients. In this one-way error model,  $v_i$  denotes the time-invariant and unobservable country-specific effects, and  $\mu_{it}$  denotes the remainder disturbance with mean zero and variance-covariance  $\sigma^2_v I_{nt}$ .

**Table 2: Benchmark Fixed Effects Regression: Dependent Variable – DV**

(1)	(2)	(3)	(4)
<i>Independent Variables</i>	<i>Coefficients</i>	<i>P – Values</i>	<i>T – Statistics</i>
$GDPP_{it}$	-22.45	0.0004*	-3.12
$Literacy_{it}$	-1.09	0.0001*	-2.89
$pop\_Gr_{it}$	1.71	0.23	1.09
$Industry_{it}$	-1.69	0.0004*	-2.95
$Male\_Unemp_{it}$	1.03	0.008*	2.36
$Comp_{it}$	-1.69	0.0015*	-2.43
$Cons_{it}$	14.42	0.0001*	3.04
Adj. R <sup>2</sup> =0.446 P-Value = 0.001 Cook-Weisberg test for heteroskedasticity Prob > chi2 = 0.5445 White's test for homoskedasticity Prob > chi2 = 0.1939 *indicates significance at 1%.			

Table 2 presents the results of the fixed-effects model. All coefficients associated with the regressors have the expected signs and are statistically significant. We follow the Baltagi (2001) procedure for testing the joint significance of fixed-effects. We find significant fixed-effects at better than 1%, suggesting the appropriateness of our application.

First, our results suggest that any increase in per-capita income is associated with a large decrease in domestic violence against women. Second, the negative and statistically significant coefficients for literacy, industry, and compensation mean that to reduce exposure to domestic violence, policymakers should encourage women to move to urban areas where education opportunities and prospects of higher compensation in general should see a beneficial effect. As for population growth, the positive estimate is suggestive of a couple of factors. If this variable is a good proxy for family size, it would imply that domestic violence is positively correlated with larger family size, which could be typically associated with lower income agrarian environments.

<sup>7</sup> These jobs include wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services, mining and quarrying (including oil production), manufacturing, electricity, gas and water, and construction.

<sup>8</sup> These also include government contributions to social insurance schemes such as social security and pensions that provide benefits to employees.

Conversely, if higher population growth is not a good proxy for family size but merely indicative of low education and poor family planning, the positive correlation still makes sense in our minds. However, this positive estimate is not statistically significant. Finally, results are consistent with the idea that yet another of the social costs associated with unemployment, such as recidivism, more theft, suicides, and homicides that others have uncovered, may be an increased of violence at home.

The measure that we use for literacy seems important as a minimum bound on educational attainment. However, we contend that a measure of a higher level of education might also be informative. Further, our “women-in-industry” measure is perhaps too specific when our hypothesis was the “rural-urban” dichotomy. Therefore, we augment our benchmark model (3.1)-(3.3) with measures of women in secondary education as well as women employed in the non-agricultural sector. In addition, we consider the percentage of females in the labor force as an attitudinal measure on behalf of the market with regard to the role of women in the economy of the country. Finally, the measure of compensation we use in our benchmark model reflected income of the female. But household consumption might also be highly predictive of the relative felicity of the household. As a result, given our benchmark model and given our discussion above we also consider the following alternative model

$$DV_{it} = \beta_i + \beta_1 GDP_{it} + \beta_2 pop\_Gr_{it} + \beta_3 fem\_nonag_{it} + \beta_4 fem\_labr_{it} + \beta_5 School\_Ratio_{it} + \beta_6 Male\_Unemp_{it} + \beta_7 Gvt_{it} + \epsilon_{it} \tag{3.4}$$

$$\epsilon_{it} = \nu_i + \mu_{it} \tag{3.5}$$

$$\beta_i = \beta_0 + \beta_8 Z_i \tag{3.6}$$

Where *fem\_nonag<sub>it</sub>* denotes the percentage of women employed in the non-agricultural sector. The total share of women in the labor force, given by *fem\_labr<sub>it</sub>*. *School\_Ratio<sub>it</sub>*, is the ratio of females to males enrolled in secondary education. Both of these measures are obtained from the same WDI database mentioned above. Finally, *Gvt<sub>it</sub>* is the share of government’s health and education services consumed by households. This measure is obtained from Summers and Heston Penn World Tables. All other variables remain the same as for our benchmark model.

**Table 3: Alternative Fixed Effects Regression: Dependent Variable – DV**

(1)	(2)	(3)	(4)
<i>Independent Variables</i>	<i>Coefficients</i>	<i>P – Values</i>	<i>T – Statistics</i>
<i>GDP<sub>it</sub></i>	-16.91	0.001*	-2.85
<i>pop – Gr<sub>it</sub></i>	1.37	0.29	1.53
<i>fem – nonag<sub>it</sub></i>	-2.41	0.001*	-3.25
<i>fem – labr<sub>it</sub></i>	-2.42	0.003*	-2.64
<i>School – Ratio<sub>it</sub></i>	-2.09	0.002*	-2.92
<i>Male – Unemp<sub>it</sub></i>	-1.46	0.002*	-2.73
<i>Gvt<sub>it</sub></i>	-0.98	0.000*	-4.00
<i>Cons<sub>it</sub></i>	7.31	0.007*	2.43
Adj. R <sup>2</sup> =0.491 P-Value = 0.000 Cook-Weisberg test for heteroskedasticity Prob > chi2 = 0.5478 White’s test for homoskedasticity Prob > chi2 = 0.2007 *indicates significance at 1%.			

Results from our alternative second model are largely in line with those of our benchmark model and congruent with our prior expectations. First, an increase in per-capita income is associated with a large decrease in domestic violence against women. However, the size of the positive response is somewhat lower than that of the benchmark regression. This is to be expected as we now have more factors that seem to contribute to the reduction in domestic violence, as described below. Second, consistent with the earlier results, the estimate of population growth is still not significant. Third, as suspected, a woman's work status has the expected effect on domestic violence. For example, increases in both the total share of women in the labor force and the percentage of women employed in the non-agricultural sector serve to reduce domestic violence. We see three avenues in which this effect works: One, an increase in either of these two variables comes hand-in-hand with a certain degree of economic independence for the woman. Two, it is likely that higher employment status is related to a higher educational attainment. Three, with employment, fewer hours are spent at home, which may reduce the likelihood of domestic frictions. All of these would seem to lower the prevalence of domestic violence.

Our results are also suggestive of reductions in domestic violence as women's enrollment in secondary education increases. This effect reinforces our conclusions from the previous statement. We do find a puzzling result. This alternative regression implies that increases in male unemployment are negatively correlated with domestic violence. The only plausible explanation we are ready to advance here is that this regression involves more—and we argue better—measures of a woman's income, educational attainment, and geographic location (rural v urban). When controlling for those factors, there is a higher likelihood that an unemployed male is less prone to violence if, economically, he is now more likely to be dependent on the woman's income. This point is a debatable one in theories of power dynamics in which imbalances may lead to abuse—but could also serve to reduce it. For example, Klaukinen (2004) shows a higher degree of a woman's economic dependence on the husband raises the likelihood of intimate partner violence. This implies that as the woman becomes more independent, the incidence of domestic violence should reduce. Our results are consistent with this conclusion. On the other hand, our results also suggest that higher male dependence on the female decreases the incidence of violence. This runs counter to Fox et al.'s (2002) comment that when the female contributes more, financially, than her male partner, he may use violence as a basis for power. It is important to note that their conclusion is largely conjectural, as they do not posit a formal test of dynamic.

Finally, as the household consumption of government-provided health and education services increase, the incidence of violence at home decreases. Results from both models are largely in line with some of the previous research and our prior intuition. Economic, social, and educational factors all seem to be important in reducing home violence.

### 3.2 A random coefficient model

An alternative method to country-specific fixed effects is a random coefficient model (RCM). Using the latter procedure, we allow for a unit-to-unit variation in the model parameters (Beck et al. 2004). The explanatory and predictive power of the model increases with, among other alternatives, a Random Coefficient Model (Hsiao, 1996). It allows the coefficients to vary randomly, so that we can individually test whether the domestic violence of each of the country of interest  $i$ , has an impact on the per-capita gdp of country. The results are presented in Table 4. With the Random Coefficient Model, individual coefficients for each country have been obtained.



**Table 4. Group-specific coefficients. Dependent variable: Domestic violence (DV)**

Variable	Country	Coefficient	P	t
$DV_{i,t(t-1)}$	1	-0.319	0.037**	-2.08
$DV_{i,t(t-1)}$	2	-0.243	0.043**	-2.73
$DV_{i,t(t-1)}$	3	-0.211	0.017**	-2.55
$DV_{i,t(t-1)}$	4	-0.338	0.004**	-2.85
$DV_{i,t(t-1)}$	5	-0.236	0.063*	-1.98
$DV_{i,t(t-1)}$	6	-0.249	0.011**	-2.56
$DV_{i,t(t-1)}$	7	-0.14	0.023**	-2.29
$DV_{i,t(t-1)}$	8	-0.51	0.005**	-2.84
$DV_{i,t(t-1)}$	9	-0.40	0.001**	-3.37
$DV_{i,t(t-1)}$	10	-0.45	0.001**	-3.44
$DV_{i,t(t-1)}$	11	-0.64	0.000**	-4.64
$DV_{i,t(t-1)}$	12	-0.35	0.022**	-2.29
$DV_{i,t(t-1)}$	13	-0.48	0.000**	-5.39
$DV_{i,t(t-1)}$	14	-0.57	0.002**	-3.02
$DV_{i,t(t-1)}$	15	-0.28	0.024**	-2.46

\*indicates significance at 10%, \*\*indicates significance at 5%

In all 15 countries, country *i*'s DV is negatively and significantly related to per capita income. The conclusions that can be drawn from these results are evident. Violence prevention policies will have significant economic effects. An effective reduction of violence could contribute substantially to the economic growth of the region.

**4. Conclusion**

Domestic violence against women is a pervasive and poignant problem in many countries. South American countries seem to be especially plagued by this problem. Previous studies investigated domestic violence because of psychological and social factors. In this study, we examine the effects of economic—as well as social and educational—factors on this problem. We consider such variables as per-capita income, literacy rate among women, type of employment by women, female participation, male unemployment rates, female enrollment in secondary school, household consumption, and other economic and social factors on domestic violence in 15 Latin American countries. Our findings show that most of our income, consumption, and education variables seem to be negatively correlated with domestic violence against women.

Based on the overall performance of our estimated models and the statistical fit, the empirical results of this paper seem to provide some useful information that could form a base for policy action to alleviate domestic violence against women in those countries. While the empirical findings of this paper are consistent with the conclusions of previous research, our research differs from others in two aspects. First, we have focused on 15 Latin American countries, which are relatively more homogeneous than other subsets of countries. We believe this leads to more robust results when comparing to other research that focuses on larger but more disparate subsamples. Second, by considering a set of household level data, as well as macro-level data, we feel our study of the domestic determinants of violence is more comprehensive than that of others.

The phenomenon of violence is one of the biggest concerns of the citizens of Latin America. This worry is justified, taking into account that the region has crime rates that are well above those of other regions of the world. The situation is a real human drama for the hundreds of thousands of families that are affected each year by different manifestations of the phenomenon. To the social consequences must be added the repercussions on the economic activity of the countries of the zone. Violence conditions the accumulation of productive factors, negatively affecting physical capital, human capital and social capital. Furthermore, it leads to an increase in the production costs, damages the social infrastructure and deteriorates security, increasing transaction costs.

Some of the measures to be adopted would be carried out through educational programs; controlling the consumption of alcohol and drugs and the possession of weapons; strengthening institutional systems dedicated to the fight against crime, especially the police and the judicial system; fighting against impunity and fomenting transparency; reforming the punishment system; and fighting against poverty, exclusion and social inequality.

Lastly, given the importance of the phenomenon, it is necessary to foster research to analyze the risk factors, prevention policies and the social and economic cost of violence.

Possible extensions could also shed light on what we assume to be another important contributing factor: cultural influence. For example, we have conjectured on measures of women participation in government—such as percent of parliament seats held by women—as a measure that denotes a certain attitudinal proclivity toward more openness to the role of women in society. We would interpret a negative correlation between women participation in government and domestic violence as a possible cultural preponderance to the acceptance of women and aversion to violence in those countries.

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