

# Real Exchange Rate, the Wage Gender Gap and Domestic Violence\*

**Ignacio Munyo**  
Universidad de Montevideo

and

**Martín A. Rossi**  
Universidad de San Andrés

**Abstract.** We exploit the natural experiment generated by a strong depreciation of the Uruguayan real exchange rate between 2002 and 2003 followed by an equally strong appreciation between 2004 and 2010 to explore the causes of domestic violence. The real exchange rate is a measure of the relative price between tradable and non-tradable goods. We thus take advantage of the fact that traditionally men are employed in tradable industries (manufacturing) and women are employed in non-tradable industries (services), and therefore a change in the real exchange rate has a different impact in men's and women's potential wages. In line with models of household bargaining, we find that an increase in the real exchange rate, thus generating an increase in the bargaining power of men relative to women within the household, increases domestic violence. The result holds in both high and low income jurisdictions of the city.

**Keywords:** Real exchange rate, wage gender gap, domestic violence.

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\* Ignacio Munyo, [imunyo@um.edu.uy](mailto:imunyo@um.edu.uy); Martín Rossi, [mrossi@udesa.edu.ar](mailto:mrossi@udesa.edu.ar). We thank Ana Balsa, José María Cabrera, Herman Kamil, Gerardo Licandro, Rodrigo Lluberas, Carlos Scartascini, and participants at various seminars and congresses for useful comments and suggestions. Mauricio Echevarría provided excellent research assistance.

## **I. Introduction**

Domestic violence is widespread and common. One out of three women around the world has suffered violent episodes from a partner during their lifetime (WHO 2013). The problem particularly affects women living in developing countries. A report based on data from the Demographic and Health Surveys in nine developing countries (Cambodia, Colombia, Dominican Republic, Egypt, Haiti, India, Nicaragua, Peru, and Zambia) shows that the percentages of women who said an intimate partner had ever abused them ranged from 48 percent in Zambia and 44 percent in Colombia to 18 percent in Cambodia and 19 percent in India (Kishor and Johnson 2004).

In this paper we explore the causes of domestic violence, using data from Uruguay. Uruguay is not an exception in terms of the prevalence of domestic violence: a recent survey from the Ministry of Public Health reveals that one out of four women in Uruguay is a victim of domestic violence. The survey also shows that the incidence of domestic violence is higher for women with low educational attainment.

To study the causes of domestic violence we exploit the natural experiment generated by a strong depreciation of the Uruguayan real exchange rate between 2002 and 2003,<sup>1</sup> followed by an equally significant appreciation of the real exchange rate between 2004 and 2010. As the real exchange rate is a measure of the relative price between tradable and non-tradable goods, we take advantage of the fact that men are traditionally employed in tradable industries (e.g., manufacturing) and women are traditionally employed in non-tradable industries (e.g., services).

We exploit an exogenous variation in wage gender gap generated by the fluctuation in the real exchange rate. This allows us to estimate the impact effect of better outside options for women on domestic violence. Exploiting the variability in the proportion of women and men in tradable and non-tradable sector across the jurisdictions in Montevideo (the capital of Uruguay, 1.5 millions of inhabitants), we

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<sup>1</sup> Due to the lack of international reserves to sustain the value of the currency in July 2002, the Central Bank of Uruguay was forced to a sudden interruption in the fixed exchange rate regime (crawling peg).

find that a reduction in potential wages for women relative to men leads to an increase in domestic violence. This result holds in both rich and poor jurisdictions of the city.

We contribute to the ongoing debate between two alternative theories. On the one hand, socio-cultural models predict that violence against women increases as women's wages increase, mainly because men feel their traditional gender role threatened: "when she brings home the bacon" (Macmillan and Gartner 1999). In this line, Bertrand et al. (2015) show that the distribution of the share of income earned by the wife exhibits a sharp drop when the wife's income exceeds the husband's income. They argue that this pattern is explained by gender identity norms, which induce an aversion to a situation where the wife earns more than her husband.

On the other hand, models of household bargaining predict that an increase in a woman's relative potential wage increases her bargaining power by providing her with an outside option (Farmer and Tiefenthaler 1997; Aizer 2010). Given that it is not the actual wage but the potential wage what determines the outside option, improving relative labor market conditions for women will decrease violence even in those households where women do not work (Pollak 2005). The opposite is also true: the deterioration in women's potential wages relative to men will increase domestic violence.

Most of previous empirical studies (Gelles 1976; Bowlus and Seitz 2006; Tauchen et al. 1991; Farmer and Tiefenthaler 1997) suffer relevant methodological shortcomings given either by omitted variables associated with women's wages (such as education) that could explain the negative relationship with violence, or by the reverse causality given by the fact that domestic violence may reduce woman's productivity and earnings.

A notable exception is Aizer (2010), who presents a household bargaining model that incorporates violence and analyzes the impact of the wage gap as a function of local

demand for female and male labor. She provides empirical support in the US for a causal relationship between relative labor market conditions for women and female hospitalizations for assault. Her main finding is that a decrease in the wage gap between men and women reduces violence against women. Here we expand these results by considering not only serious physical but also non-physical abuse against women. In fact, according to a recent survey of the National Bureau of Statistics (INE 2013), 1/3 of the women victims from domestic violence suffer physical aggressions and 2/3 suffer psychological aggressions.<sup>2</sup> Our findings considering a wider definition of domestic violence are also consistent with the household bargaining model.

The paper continues as follows. Section II describes the data and presents the empirical strategy. Section III reports the results. Section IV concludes.

## **II. Data and statistical methods**

We analyze domestic violence in a period where potential gender wage gap suffered an exogenous strong variation. Specifically, we exploit changes in the real exchange rate as a measure of the relative price between tradable (male-work intensive) and non-tradable goods (female-work intensive). This approach accounts for the fact that the theory predicts that are the potential wages, not actual, that affect domestic violence.

### *Data*

The Uruguayan Law defines domestic violence in similar way to the US Department of Justice. Therefore in this paper we consider domestic violence as a pattern of abusive behavior in any relationship that is used by one partner to gain or maintain power and control over another intimate partner. Domestic violence can thus be physical, sexual, emotional, economic, or psychological actions or threats of actions that influence the partner at home.

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<sup>2</sup> Moreover, among those victims of physical domestic violence, roughly a half suffers from sexual aggression.

The real exchange rate adopts alternative definitions in the literature (Hinkle and Montiel 1999). First, the real exchange rate can be defined as the relationship between domestic prices and external prices (trade-weighted multilateral), both expressed in the same currency:  $RXR_1 = (E.P^*)/P$ , where  $E$  is the nominal exchange rate measured in domestic currency per foreign currency,  $P^*$  is the level of external prices, and  $P$  the level of domestic prices. More importantly for the purpose of this paper, the real exchange rate can also be defined as a price ratio of different categories of goods of the domestic economy: tradable goods and services and non-tradable goods and services. Tradable goods and services are subjected to international trade so arbitrage determines that their internal price tends to equal the international one. This is not true for non-tradable goods and services where the price must be adjusted to close the excess of demand or supply in the domestic market. The real exchange rate is thus alternatively defined as follows:  $RXR_2 = P_T/P_N$ , where  $P_T$  refers to the tradable price and  $P_N$  for the non-tradable price. It is straightforward to show that both definitions  $RXR_1$  and  $RXR_2$  are closely related.<sup>3</sup> Therefore, changes in the multilateral trade-weighted real exchange rate come hand in hand with changes in the relative prices of tradable and non-tradable goods.

Data from the National Household Survey confirms that wages of men relative to women in Uruguay commoves with the real exchange rate. In fact, between 2002 and 2004, after strong real exchange rate depreciation, the ratio of men's wages to women's wages in Montevideo increased from 1.52 to 1.58; and between 2004 and 2010, after a real exchange rate appreciation (similar in absolute values to the previous depreciation), the wage ratio decreased back to 1.52.

Figure 1 presents a striking pattern of the times series of domestic violence and the trade-weighted multilateral real exchange rate in the period January 2002 to

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<sup>3</sup>  $RXR_1 = (E.P^*)/P = (E.P^*) / (P_T^\alpha . P_N^{(1-\alpha)}) = E.P^*/(P_T) [P_T / P_N]^{(1-\alpha)} = D.RER_2^{(1-\alpha)}$  where  $P$  is a geometric price average,  $D$  is the tradable goods price deviation with respect to the external prices expressed in the same currency, and  $\alpha$  is the share of the tradable goods in the domestic prices basket.

December 2010. Data comes from the Ministry of the Interior and the Central Bank of Uruguay. Between May 2002 and January 2004 the trade-weighted multilateral real exchange rate depreciated by 58 percent while at the same time domestic violence increased by 154 percent. That is, in this period violence against women in Uruguay increased as their potential relative earnings have decreased. Interestingly, the reverse dynamics is also true: between January 2004 and February 2009 the trade-weighted multilateral real exchange rate appreciated by 29 percent while at the same time domestic violence decreased by 61 percent.

In this same time window, the behavior of a similar type of crime such as assaults (abusive behavior against another person excluding domestic violence) was different to the one observed in domestic violence.<sup>4</sup> Assaults increased by 40 percent between May 2002 and January 2004 and also increased by 6 percent between January 2004 and February 2009.

A basic regression analysis on monthly data from January 2002 to December 2010 (not reported) confirms these results.<sup>5</sup> The coefficient of regressing domestic violence on the real exchange rate is positive and statistically significant at the 10 percent level. The coefficient is not statistically significant when we consider assaults instead of domestic violence.

To analyze this observed pattern, we use the database of the Police Department of Montevideo, which includes the universe of offenses reported between 2002 and 2010.<sup>6</sup> The database has information on the date and the jurisdiction of the incident (Montevideo has 24 police jurisdictions).

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<sup>4</sup> Our database includes 19,276 cases of Domestic Violence (2% of total crime between 2020 and 2010 in Montevideo) and 38,657 cases of Assaults (5% of total crime between 2020 and 2010 in Montevideo).

<sup>5</sup> The Augmented Dickey-Fuller Test (MacKinnon 1996) rejects the null hypothesis that the time series on domestic violence and assaults have a unit root. To deal with potential heteroskedasticity and serial correlation we compute Newey-West robust standard errors with a lag truncation of 4 months. All results mentioned but not shown are available from the authors upon request.

<sup>6</sup> There is no a regular survey on domestic violence victimization.

Additionally, we gather data from the National Household Survey running by the National Bureau of Statistics in an annual basis in order to compute labor participation of men and women in tradable and non-tradable industries. First of all we checked that the share of women in the population is very similar across jurisdictions and years. The average share of women is 54%, ranging from a maximum of 57% to a minimum of 48%. We identify industries as tradable or non-tradable. We consider the International Standard Industrial Classification (Rev.3) to define a) Agriculture, hunting and forestry, b) Fishing, c) Mining and quarrying, and d) Manufacturing as tradable industries. The remaining industries were considered as non-tradables. This classification is in line with Stockman and Tesar (1995) and Aboal et al. (2005). In Table 2 we present the share of employed agents working in tradable sectors for each police jurisdiction from 2002 to 2010. As observed in that table, there is an important variability both over time and across jurisdiction. As expected, tradable industries are more intensive in male human capital than in female human capital. For every year since 2002 to 2010, the average share of men working in tradable sectors is higher than the share of women. If we consider the total sample period, 20 percent of men are employed in tradable sectors compared to a 14 percent of women. The differences in the employment rate in tradable sectors between men and women are statistically significant according to usual t-tests for each year and in the total sample period.

Figure 2 reports the histogram of the ratio of male to female participation in tradable sectors for the 24 jurisdictions in Montevideo. In line with Table 2, the histogram shows that there is an important variability in the proportion of men to women working in tradable sector across jurisdictions in Montevideo: it ranges from a minimum of 1.0 to a maximum of 2.4.

To identify the effect of potential wage gender gap on domestic violence we exploit the variability in the relative proportion of men to women working in the tradable sector in each police jurisdiction. We assume that unemployed people

(including people who decided not to work) have the same distribution of tradable and non-tradable skills of those currently employed. By doing so, we recognize the potential impact of better options in the job market on unemployed people.

### *Empirical Strategy*

Figure 3 introduces our identification strategy. We divide the 24 police jurisdictions in two groups. The first group comprises those jurisdictions where the ratio of men to female participation in tradable sectors is higher than 1.5 and a second group those where this ratio is smaller than 1.5. Then, we track the variation in domestic violence in both groups of jurisdictions in time windows defined by the fluctuations in the real exchange rate. Previous to the real exchange rate depreciation (January 2002 to May 2002), when the real exchange rate was flat, there was a small reduction in domestic violence in both groups of jurisdictions. However, as long as the real exchange rate depreciates (May 2002 to January 2004), domestic violence increases much more in those jurisdictions where the ratio of men to female participation in tradable sectors is more intensive. In other words, the higher the participation rates of men relative to women in tradable sectors the stronger the impact in domestic violence. By the same token, when the real exchange rate appreciates (January 2004 to February 2009), the decrease in domestic violence is stronger in those jurisdictions where the ratio of men to female participation in tradable sectors is higher.

In order to identify the causal effect we follow a difference-in-difference methodology that controls for observable and unobservable characteristics that remain constant along time and also for shocks common to all jurisdictions. We thus run the following equation:

$$Y_{it} = \beta D_i RXR_t + \mu_t + \delta_i + e_{it} \quad (1)$$

where  $Y_{it}$  is domestic violence in jurisdiction  $i$  and month  $t$ ,  $D_i$  is the relative proportion of employed men in tradable sectors to employed women in tradable sectors in

jurisdiction  $i$  in 2002 (the first year of our sample period),<sup>7</sup>  $RXR_t$  is the multilateral exchange rate,  $\mu_t$  is a month fixed effect,  $\delta_i$  is jurisdiction fixed effect, and  $e_{it}$  is the usual error term. In this equation the parameter of interest is  $\beta$ .

The hypothesis is that an increase in the exchange rate should have a stronger effect on domestic violence in those jurisdictions where the relative proportion of men to women in tradable sectors is higher. That is, we expect  $\beta > 0$ .

### III. Results

Table 3 report estimates of Equation (1). In line with our hypothesis, the coefficient on the interaction term is positive and statistically significant, even after considering standard errors clustered at the jurisdiction level (column (1)). That is, an increase in the exchange rate has a stronger effect on domestic violence in those jurisdictions where the relative proportion of men to women in tradable sectors is higher. Indeed, the coefficient is not only statistically significant but also quantitatively substantial. An increase of one standard deviation in the real exchange rate is associated with an increase of 2.7 cases of domestic violence (evaluated at the sample mean of the ratio of men to female participation in tradable sectors). This increase in the number of cases of domestic violence is important since it represents more than 1/3 of the sample mean (7.39).

To discard alternative interpretations of the results, we introduce two key controls in the regression (column (2)): jurisdictions' relative unemployment and per capita income. Firstly, the fact that the result holds after controlling by jurisdiction's relative unemployment of men and women suggests that the effect is driven by changes in potential wages and not by changes in the unemployment rate. This is important because it reduces the likelihood of alternative interpretations that connect the variation in domestic violence with potential stress produced by harsher labor market conditions for

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<sup>7</sup> We also consider the same data for the period 2003-2010 with no significant differences. In each police jurisdiction, the values of the *coefficient of variation* (the ratio of the standard deviation to the mean) across time from 2002 to 2010 of the share of men and women working in tradable-sector industries are very stable.

men. Secondly, the fact that the result also holds after controlling by jurisdiction's per capita income discards alternative interpretations that connect the variation in domestic violence with fluctuations in the aggregate level of income of the household instead of the change in women bargaining power.

We also control for Assaults, a similar type of offense but outside the home, and total crime (see columns (3) to (6)). In all cases we find similar results.<sup>8</sup>

The results are similar when we use the number of cases of domestic violence normalized by jurisdictions' population, and when we use annual data instead of monthly data. Results also hold when we use a regression model for count data (Poisson or Negative Binomial). These robustness checks (not shown, available upon request) provide additional confidence that the effect on domestic violence is indeed causal.

In Table 4 we study separately the impact for jurisdictions with high income and low income. We define as rich a jurisdiction where the average per capita income is above the 66<sup>th</sup> percentile of the per capita income of the city in the first year of the sample. We define as poor a jurisdiction where the average per capita income was below the 33<sup>rd</sup> percentile of the per capita income of the city in the first year of the sample.

We reproduce exactly the same analysis of Table 3 in both cases. Even though we find a stronger effect in low income jurisdictions, the previous results hold also for high income jurisdictions.

#### **IV. Conclusions**

In this paper we dig further into the economic causes of domestic violence. We analyze the relationship between income and domestic violence. We extend previous findings in the literature by expanding the coverage of the definition of domestic violence (including any type of non-physical abuse). We found that a reduction in

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<sup>8</sup> Note that in the last regression the p-value is marginally not significant in the model with clustered standard errors. However, that the two additional controls (GDP and unemployment rate) are not significant, which suggests that the regression with controls is less efficient than the regression without controls.

women's potential wages relative to men increase domestic violence, whereas an increase in women's relative potential wages decrease men's incentives for aggression within the home. Though different in intensities, the result holds in both high and low income jurisdictions of the city suggesting that the effect cut across different levels of income.

Our paper, as most papers in this literature, uses data on reported crime instead of actual crime. In principle, it is possible that reporting is not orthogonal to the changes in the exchange rate potentially biasing our estimates. However, this bias could go in either direction. For example, the appreciation of the real exchange rate may decrease reporting if women feel sorry for the worsening of men's economic conditions. Alternatively, the availability of better outside options may increase the propensity of women to report domestic violence.

Our findings contribute to the ongoing debate on the causal effect of wage gender gap and domestic violence. We present evidence in line with the hypothesis that an increase in the bargaining power of women relative to men within the household reduces domestic violence. Therefore, policies aimed at reducing wage gender gap would have potential positive impact on domestic violence. At the same time, our results also suggest that the intensity of women-oriented policies should be calibrated according to the fluctuations in the real exchange rate. In fact, macro literature has long recognized potential economic advantages of real exchange depreciations given by exporters' competitiveness gains. Here we unveil a hidden potential social problem associated with the real exchange depreciation: the increase in domestic violence.

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**Table 1. Summary statistics**

	Mean	St. Dev.	Min.	Max.	Obs.
Domestic violence	7.394	6514	0	44	2,592
Assaults	14.879	9683	0	56	2,592
Per capita income	7706	4133	2298	22527	216
Relative unemployment of men to women	0.685	0.200	0.182	1.346	216
Ratio of men to female participation in tradable sectors	2.081	0.564	1	4	24
Multilateral exchange rate	121.593	15.079	91	150	108

**Table 2. Employment rates in tradable sectors**

Jurisdiction	2002		2003		2004		2005		2006		2007		2008		2009		2010	
	Men	Women																
<b>1</b>	13%	15%	7%	9%	10%	13%	12%	11%	11%	10%	15%	7%	18%	12%	9%	8%	11%	9%
<b>2</b>	16%	7%	9%	7%	13%	7%	12%	10%	12%	7%	17%	10%	13%	7%	11%	12%	12%	8%
<b>3</b>	12%	7%	14%	9%	15%	7%	14%	11%	14%	10%	14%	9%	13%	7%	13%	10%	12%	9%
<b>4</b>	14%	9%	12%	9%	15%	12%	17%	13%	15%	13%	18%	13%	15%	11%	12%	10%	14%	10%
<b>5</b>	14%	8%	12%	7%	13%	9%	15%	9%	13%	9%	15%	10%	12%	7%	14%	10%	12%	8%
<b>6</b>	19%	12%	16%	15%	18%	12%	16%	14%	19%	12%	18%	12%	19%	12%	17%	11%	18%	11%
<b>7</b>	17%	12%	21%	14%	18%	11%	17%	12%	20%	12%	18%	11%	21%	13%	17%	12%	21%	12%
<b>8</b>	20%	15%	19%	16%	21%	16%	21%	12%	21%	17%	21%	15%	25%	17%	22%	14%	22%	14%
<b>9</b>	14%	10%	14%	10%	12%	10%	15%	10%	14%	10%	15%	10%	14%	9%	12%	8%	12%	9%
<b>10</b>	18%	10%	12%	11%	15%	9%	14%	10%	13%	8%	16%	11%	13%	7%	12%	9%	13%	9%
<b>11</b>	15%	13%	15%	12%	15%	7%	16%	9%	15%	8%	14%	9%	16%	9%	16%	8%	14%	11%
<b>12</b>	16%	12%	17%	15%	21%	16%	14%	14%	17%	14%	16%	15%	15%	16%	19%	12%	18%	15%
<b>13</b>	15%	11%	15%	13%	19%	17%	15%	12%	17%	10%	19%	13%	18%	11%	18%	11%	16%	12%
<b>14</b>	15%	12%	17%	9%	20%	11%	18%	10%	18%	11%	17%	10%	17%	11%	17%	10%	18%	10%
<b>15</b>	18%	12%	16%	11%	13%	10%	12%	10%	15%	12%	16%	11%	14%	11%	13%	9%	15%	9%
<b>16</b>	19%	14%	19%	16%	19%	13%	22%	16%	21%	16%	21%	14%	20%	15%	21%	15%	20%	15%
<b>17</b>	19%	13%	25%	16%	20%	17%	25%	19%	20%	16%	23%	15%	25%	18%	25%	15%	22%	15%
<b>18</b>	18%	14%	23%	17%	22%	14%	23%	16%	23%	17%	21%	16%	24%	16%	23%	17%	22%	13%
<b>19</b>	24%	13%	23%	16%	27%	18%	20%	17%	24%	17%	24%	16%	24%	15%	26%	14%	23%	16%
<b>20</b>	25%	26%	32%	34%	39%	21%	33%	31%	32%	26%	34%	25%	36%	24%	39%	24%	37%	25%
<b>21</b>	24%	18%	29%	18%	26%	18%	27%	18%	25%	19%	27%	17%	28%	16%	26%	17%	23%	16%
<b>22</b>	35%	19%	31%	28%	48%	27%	38%	26%	33%	21%	41%	22%	40%	21%	35%	17%	33%	17%
<b>23</b>	22%	19%	33%	30%	32%	23%	26%	26%	27%	21%	27%	21%	30%	21%	31%	22%	29%	21%
<b>24</b>	19%	19%	26%	16%	21%	20%	20%	17%	25%	16%	23%	16%	24%	16%	24%	16%	23%	15%
Max.	35%	26%	33%	34%	48%	27%	38%	31%	33%	26%	41%	25%	40%	24%	39%	24%	37%	25%
Min.	12%	7%	7%	7%	10%	7%	12%	9%	11%	7%	14%	7%	12%	7%	9%	8%	11%	8%
Mean	18%	13%	19%	15%	20%	14%	19%	15%	19%	14%	20%	14%	21%	13%	20%	13%	19%	13%
St. Dev.	5%	4%	7%	7%	9%	5%	7%	6%	6%	5%	7%	4%	7%	5%	8%	4%	7%	4%
T-test	$p=0,000$		$p=0,025$		$p=0,002$		$p=0,009$		$p=0,000$									

Notes: t-test refers to usual difference of means test. In the total sample period (2002-2010), 20% of men are employed in tradable sectors and 14% of women, and the differences in the employment rate in tradable sectors between men and women are statistically significant according the difference of means t-test.

**Table 3. Main results**

	Dependent Variable: Domestic Violence					
	(1)	(2)	(3)	(4)	(5)	(6)
Ratio * RXR	0.0873 (0.0168) <i>p</i> =0.000 [0.0437] <i>p</i> =0.058	0.0813 (0.0173) <i>p</i> =0.000 [0.0459] <i>p</i> =0.090	0.0849 (0.0161) <i>p</i> =0.000 [0.0417] <i>p</i> =0.053	0.0737 (0.0164) <i>p</i> =0.000 [0.0427] <i>p</i> =0.098	0.0812 (0.0156) <i>p</i> =0.000 [0.0413] <i>p</i> =0.061	0.0688 (0.01599) <i>p</i> =0.000 [0.0424] <i>p</i> =0.118
Relative unemployment		-0.1648 (0.4358) <i>p</i> =0.705 [0.4428] <i>p</i> =0.713		-0.2169 (0.4305) <i>p</i> =0.614 [0.4059] <i>p</i> =0.598		-0.2478 (0.4225) <i>p</i> =0.558 [0.3888] <i>p</i> =0.530
Per capita income		0.0002 (0.0001) <i>p</i> =0.039 [0.0002] <i>p</i> =0.428		0.0003 (0.0001) <i>p</i> =0.000 [0.0002] <i>p</i> =0.117		0.0003 (0.0001) <i>p</i> =0.000 [0.0002] <i>p</i> =0.127
Assaults			0.1123 (0.0182) <i>p</i> =0.000 [0.0349] <i>p</i> =0.004	0.1218 (0.0186) <i>p</i> =0.000 [0.0340] <i>p</i> =0.002		
Total crime					0.0135 (0.0014) <i>p</i> =0.000 [0.0032] <i>p</i> =0.000	0.0144 (0.0014) <i>p</i> =0.000 [0.0033] <i>p</i> =0.000

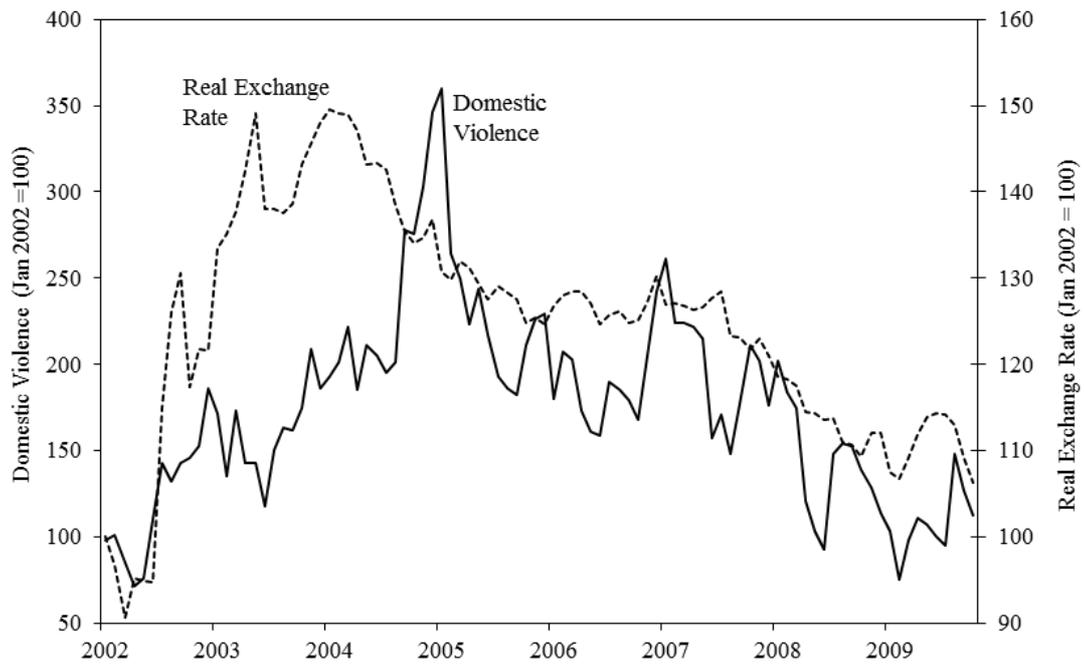
*Notes:* RXR refers to real exchange rate. Ratio refers to the ratio of men to female participation in tradable sectors. Relative unemployment refers to the ratio of the unemployment rate of men to the unemployment rate of women. All models are estimated by OLS on 2592 observations and include month fixed effects and jurisdiction fixed effects. Robust standard errors are in parentheses; standard errors clustered at the jurisdiction level are in brackets *p* refers to the *p*-value of each test.

**Table 3. Results by income level**

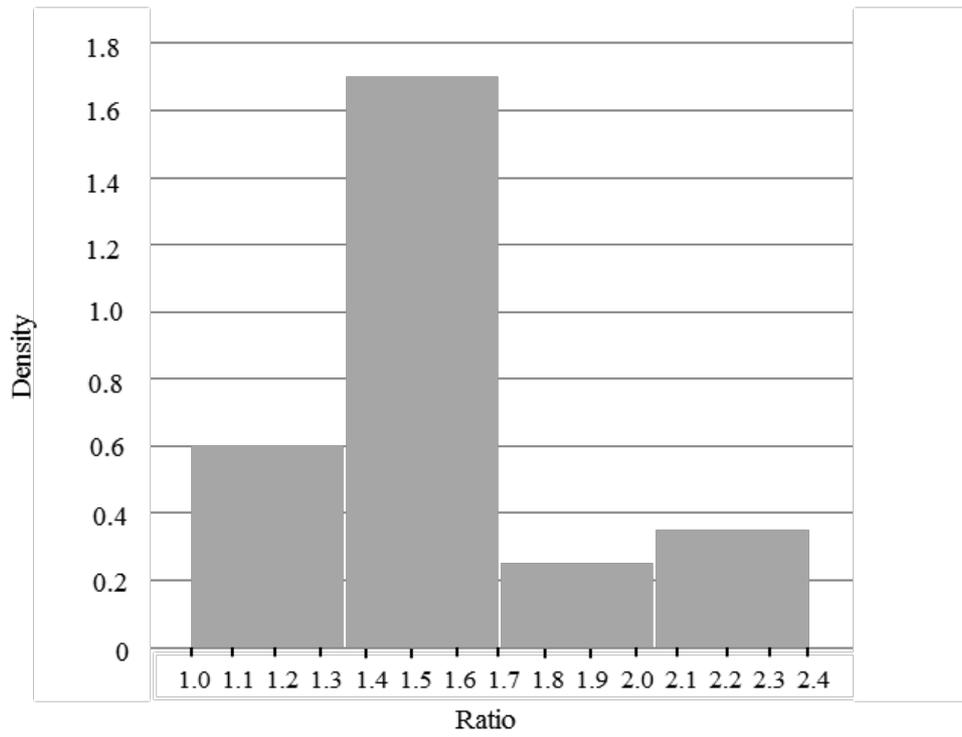
Dependent Variable: Domestic Violence - Low Income Jurisdictions						
	(1)	(2)	(2)	(4)	(5)	(6)
Ratio * RXR	0.1616 (0.0305) <i>p</i> =0.000 [0.0467] <i>p</i> =0.011	0.1543 (0.0311) <i>p</i> =0.000 [0.0592] <i>p</i> =0.035	0.1497 (0.0290) <i>p</i> =0.000 [0.0513] <i>p</i> =0.022	0.1477 (0.0295) <i>p</i> =0.000 [0.0595] <i>p</i> =0.042	0.1381 (0.0276) <i>p</i> =0.000 [0.0563] <i>p</i> =0.044	0.1372 (0.0280) <i>p</i> =0.000 [0.0621] <i>p</i> =0.063
Relative unemployment		2.4352 (1.8269) <i>p</i> =0.183 [1.7957] <i>p</i> =0.217		1.3529 (1.7669) <i>p</i> =0.444 [1.6120] <i>p</i> =0.429		0.9777 (1.7577) <i>p</i> =0.578 [1.6938] <i>p</i> =0.582
Per capita income		-0.0024 (0.0009) <i>p</i> =0.008 [0.0018] <i>p</i> =0.217		-0.0009 (0.0009) <i>p</i> =0.286 [0.0020] <i>p</i> =0.653		-0.0006 (0.0009) <i>p</i> =0.500 [0.0020] <i>p</i> =0.782
Assaults			0.2177 (0.0309) <i>p</i> =0.000 [0.0409] <i>p</i> =0.001	0.2078 (0.0312) <i>p</i> =0.000 [0.0424] <i>p</i> =0.002		
Total crime					0.0293 (0.0031) <i>p</i> =0.000 [0.0045] <i>p</i> =0.000	0.0286 (0.0031) <i>p</i> =0.000 [0.0045] <i>p</i> =0.000
Dependent Variable: Domestic Violence - High Income Jurisdictions						
	(7)	(8)	(9)	(10)	(11)	(12)
Ratio * RXR	0.0500 (0.0361) <i>p</i> =0.166 [0.0167] <i>p</i> =0.020	0.0560 (0.0356) <i>p</i> =0.116 [0.0189] <i>p</i> =0.021	0.0499 (0.0363) <i>p</i> =0.170 [0.0169] <i>p</i> =0.021	0.0567 (0.0359) <i>p</i> =0.114 [0.0190] <i>p</i> =0.020	0.0327 (0.0358) <i>p</i> =0.361 [0.0179] <i>p</i> =0.110	0.0372 (0.0355) <i>p</i> =0.295 [0.0189] <i>p</i> =0.090
Relative unemployment		-0.2993 (0.6019) <i>p</i> =0.619 [0.5956] <i>p</i> =0.631		-0.2992 (0.6027) <i>p</i> =0.620 [0.5985] <i>p</i> =0.632		-0.1827 (0.5929) <i>p</i> =0.758 [0.5616] <i>p</i> =0.754
Per capita income		-0.0003 (0.0002) <i>p</i> =0.032 [0.0004] <i>p</i> =0.438		-0.0004 (0.0002) <i>p</i> =0.030 [0.0004] <i>p</i> =0.433		-0.0002 (0.0002) <i>p</i> =0.196 [0.0004] <i>p</i> =0.589
Assaults			0.0016 (0.0218) <i>p</i> =0.940 [0.0100] <i>p</i> =0.874	-0.0082 (0.0224) <i>p</i> =0.716 [0.0129] <i>p</i> =0.547		
Total crime					0.0081 (0.0017) <i>p</i> =0.000 [0.0040] <i>p</i> =0.085	0.0077 (0.0017) <i>p</i> =0.000 [0.0035] <i>p</i> =0.067

Notes: RXR refers to real exchange rate. Ratio refers to the ratio of men to female participation in tradable sectors. Relative unemployment refers to the ratio of the unemployment rate of men to the unemployment rate of women. We define as low income jurisdictions where the average per capita income is below the 33rd percentile of the per capita income of the city in the first year of the sample. We define as high income jurisdictions where the average per capita income is above the 66th percentile of the per capita income of the city in the first year of the sample. All models are estimated by OLS on 864 observations and include month fixed effects and jurisdiction fixed effects. Robust standard errors are in parentheses; standard errors clustered at the jurisdiction level are in brackets *p* refers to the *p*-value of each test.

**Figure 1. Domestic violence and the real exchange rate**

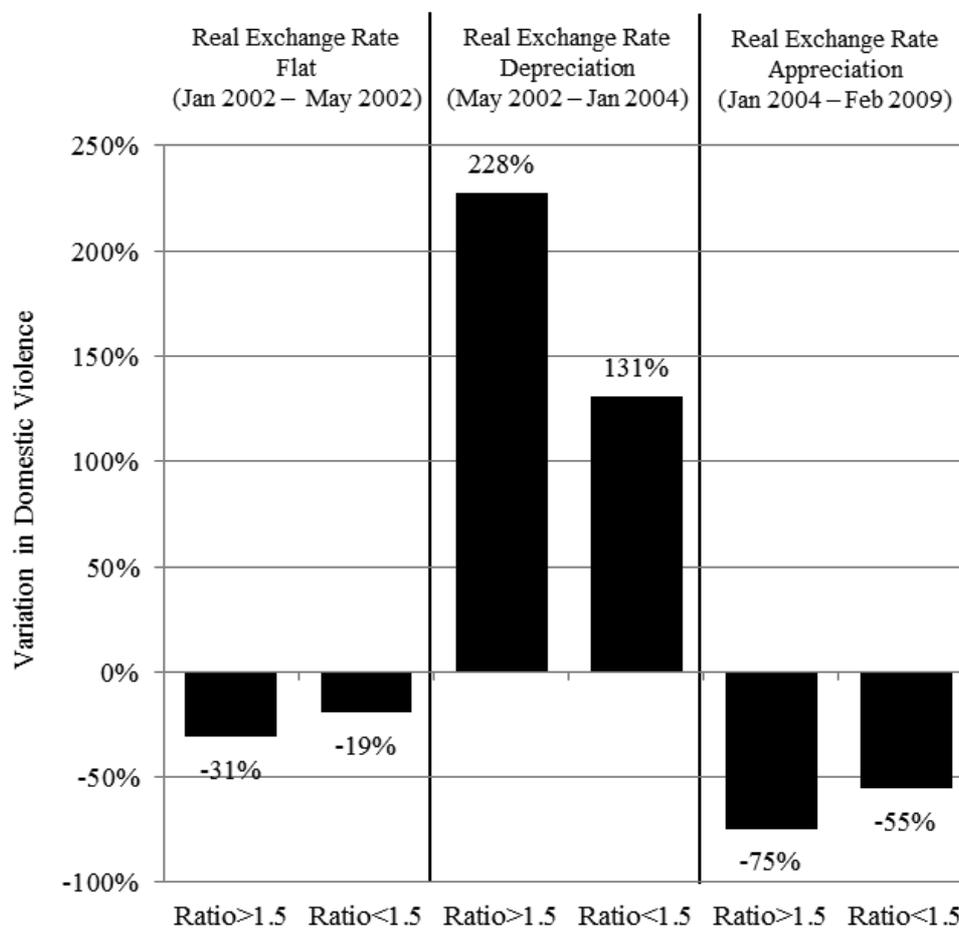


**Figure 2. Histogram of the ratio of male to female participation in tradable sectors**



*Note:* Ratio refers to the Ratio of men to female participation in tradable sectors.

**Figure 3. Real exchange rate fluctuations, relative participation in tradable sectors, and variation in domestic violence.**



*Note:* Ratio refers to the Ratio of men to female participation in tradable sectors.