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## Is Violence against Union Members in Colombia Systematic and Targeted?

Violence against union members and union leaders has been at the center of a debate in Colombia and in countries currently negotiating a free trade agreement (FTA) with Colombia. In particular, nongovernmental organizations (NGOs) and union leaders in Colombia, Europe, Canada, and the United States persistently argue that FTAs with Colombia should be blocked because there are no results to be seen from attempts by the current Colombian government to halt violence against union members. Furthermore, a recent report by an NGO claims that “while the Colombian government claims that most of the violence against trade unions is a by-product of the armed conflict, the Escuela Nacional Sindical (ENS), a respected NGO that provides training and support to the Colombian labor movement, says that the majority of the anti-union violence that takes place in Colombia is in response to the victims’ normal union activities” (see USLEAP 2008). Union leaders, for their part, have argued that under the Uribe administration, homicides of union members have increased. For instance, in a recent letter to the permanent representatives of the EU member states, John Monks, general secretary of the European Trade Union Confederation (ETUC), argues that “assassinations of trade unionists in Colombia continue at a rate unseen in any other country. . . . The country’s main trade union confederations, the Central Unitaria de Trabajadores [Central Union of Workers], the Confederación General del Trabajo [General

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Confederation of Labor], and the Confederación de Trabajadores de Colombia [Confederation of Workers of Colombia], are alerting us and providing documentation that refutes claims by the Uribe Government that the situation is under control.” He then asks the representatives to “call a halt to the FTA negotiation . . . and so make it clear to the Colombian authorities that the EU and its Member States do not condone the current situation in Colombia.”<sup>1</sup> The topic of violence against union members in Colombia even reached the debates in the last U.S. presidential campaign. More precisely, in a debate in New York, then-senator Obama pointed to abuses in Colombia as the reason for his opposition to the FTA with Colombia, saying that labor leaders were being targeted for assassination on a consistent basis.<sup>2</sup> The Colombian government defends itself, explaining that huge efforts have been made to protect unionists. During a speech in 2007, President Alvaro Uribe responded to a message sent by a U.S. member of Congress, arguing that 6,000 people in Colombia were receiving personal protection; of those, a fourth (1,500) were union members.<sup>3</sup> And so the debate goes. Many points of view are presented in discussions, and FTAs continue to be blocked.

Despite the serious claims used to block economic reforms, the abundant available evidence is rarely used to support the allegations. What are the specific indicators for violence against union members in Colombia? How do they compare with those in other countries in the region? Has there been any progress in solving the problem? Can killings of union members in Colombia be explained by their involvement in union activities?

This paper first presents the main stylized facts on violence against union members in Colombia, comparing them with the evolution of the total homicide rate and with the homicide rate for other groups identified as vulnerable (journalists, council members, mayors, teachers and the indigenous population). We also compare the level of violence against unionists in Colombia with that in other Latin American countries. Then, using panel data for Colombia at the state level from 2000 to 2008, we test the claim that union activities (wage agreements and negotiations, strikes, work stoppages, street marches, and so forth) help explain the level of violence against union members in Colombia. Testing this hypothesis is a first step toward finding whether (on average) union members in Colombia are killed because of their involvement in union activi-

1. Monks (2009).

2. See Voice of America (2008) and Leach (2008).

3. See “El Presidente Uribe Responde a Comunicado de un Sector de Congresistas de los Estados Unidos” ([www.elabedul.net/Articulos/Documentos/discurso\\_presidencial.php](http://www.elabedul.net/Articulos/Documentos/discurso_presidencial.php) [August 12, 2011]).

ties. If this hypothesis is proved wrong, that would suggest that the argument being used to block economic reforms such as FTAs with the United States, Canada, and the European Union is not supported by the available evidence.

Using different data sources and indicators, we show that there has been a remarkable decrease in homicides (in terms of both absolute numbers and the homicide rate) of union members in Colombia during the last nine years. Furthermore, we show that the decrease in homicides of union members is larger when one uses the data reported by the unions' NGO—Escuela Nacional Sindical (National Union School)—than when one uses government data. Furthermore, the decrease in homicides against union members has been steeper than the reduction observed in the total homicide rate for Colombia and in the rate for other vulnerable groups (teachers, journalists, mayors, council members and the indigenous population). Despite the large reduction in the level of violence against union members in Colombia, the country still ranks very high on that measure when compared with other countries in Latin America and the rest of the world. When analyzing the determinants of union member homicides, we find no evidence supporting the hypothesis that the homicide rate for union members can be explained by involvement in union activities, such as the unionization rate, wage agreements and negotiations, or work stoppages and strikes.

In other words, using the available information, we do not find evidence supporting the main argument used by union members in Colombia and abroad: that union members are being systematically killed because of their involvement in union activities. While this result by no means denies the possibility that there may be individual cases of targeted killings and targeted violence against union members, the violence is in no way generalized; the argument that union members in general are systematically targeted therefore is invalid and cannot be used to block economic reforms such as FTAs.

The contribution of this paper is twofold. First, with respect to policy, the paper contributes to a heated debate about the degree, evolution over time, and determinants of violence against trade union members in Colombia. Second, with respect to the academic literature, this paper contributes to the existing literature on the economics of crime pioneered by the seminal works of Becker (1968) and Ehrlich (1996) and to the empirical literature studying the determinants of crime (see Fajnzylber, Lederman, and Loayza 1998; Levitt 1999; Gaviria and Pages, 2002; Bushway and Reuter 2008; and Di Tella, Galiani, and Schargrodsky 2009, among others). While there is some academic literature on targeted violence against civilians in civil wars (Azam and Hoeffler 2002; Kalyvas 2006; Eck and Hultman 2007; Vargas 2009), and sociological studies about targeted violence against homosexuals (Herek 1992; Jenness 1995),

this paper is, to the best of our knowledge, the first one to assess whether the inherent characteristics (activities) of a given group in the population are an important determinant of violence against its members.

The paper is organized as follows. First we provide some measures of the importance of unions in the Colombian economy and compare the unionization rate in Colombia with that for other countries in Latin America. We also present the main stylized facts related to the evolution of different indicators of violence against union members in Colombia and describe some of the measures taken by the Colombian government to confront this problem. Next we present a thorough description of the data used in the empirical exercise and explain the empirical strategy; then we present the main results and robustness checks and offer our concluding remarks.

## Stylized Facts and Data

The ENS reports that the total number of unionized workers in Colombia was about 810,000 for 2009. However, according to the census conducted by the three confederations of workers in Colombia and reported directly to the Ministry of Social Protection, the total number of unionists in Colombia was about 1.4 million (2008 data).<sup>4</sup> If one takes the figure from the ENS, the unionization rate in Colombia is about 4.1 percent, whereas the figure is about 7 percent if one uses the data from the unions' census.<sup>5</sup> Compared with other countries in the region, Colombia has a relatively low unionization rate. For instance, the unionization rate is about 11 percent in Venezuela, 7 percent in Peru, 11.2 percent in Mexico, 13 percent in Uruguay, 3 percent in Guatemala, and 1 percent in Ecuador.<sup>6</sup>

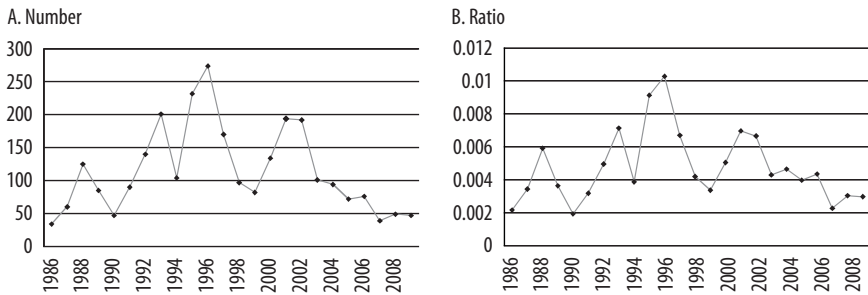
Figure 1 shows the evolution over time in the number of union member homicides in Colombia for the 1986–2009 period, as reported by the ENS, and the ratio between union member homicides and total homicides in Colombia.

As can be observed in panel A, murders of unionists increased steadily between 1986 and the mid-1990s, with a peak of 274 unionists murdered in 1996. During the second half of the 1990s, the number again increased until

4. As the difference in the two figures suggests, there is an unresolved debate between the unions and the Colombian government regarding the total number of unionized workers in Colombia.

5. From now on, we will use the figures provided by the ENS, as this dataset is available for all years that this study covers.

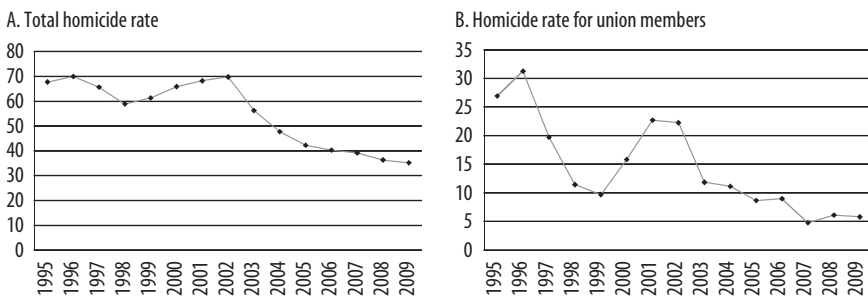
6. See New Unionism Network (2010).

**FIGURE 1. Number of Union Member Homicides and Ratio of Union Member Homicides to Total Homicides, 1986–2009**

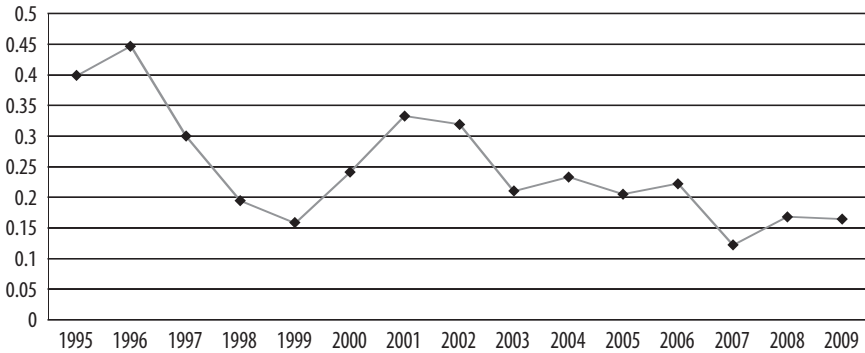
Source: Authors' calculations based on data from ENS (2009 and 2010); Office of the Vice President (2008); and National Police (2008 and 2010).

2002, when it began to fall steadily until 2009, the latest year for which there are data. Panel B shows the ratio between union homicides and total homicides in Colombia for the same time period. It demonstrates that although total homicides have dropped every year since 2002, when they were at a peak of 28,800, the number of homicides of unionists fell at a steeper rate than the number of total homicides in Colombia.

The more traditional way to look at statistics on crime is to focus on the homicide rate, defined as the number of homicides per 100,000 inhabitants. Figure 2 shows the evolution in the number of homicides in Colombia per

**FIGURE 2. Number of Total Homicides per 100,000 Inhabitants and of Homicides for Union Members per 100,000 Union Members, 1995–2009**

Source: Authors' calculations based on data from the National Police (2008 and 2010), Office of the Vice President (2009), DANE (2010), and ENS (2009 and 2010).

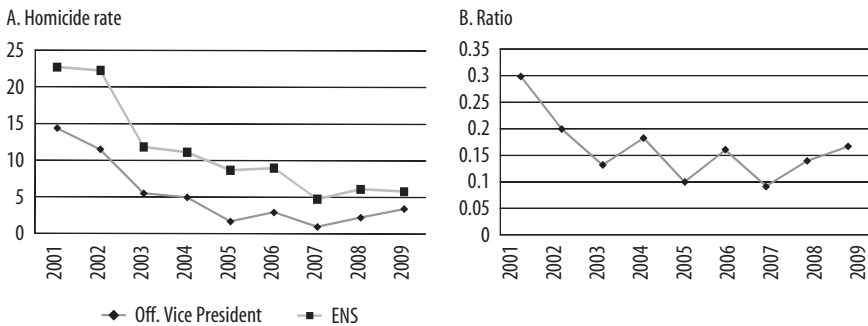
**FIGURE 3. Ratio of Union Member Homicide Rate to Total Homicide Rate, 1995–2009**

Source: Authors' calculations based on data from the National Police (2008 and 2010), Office of the Vice President (2009), DANE (2010), and ENS (2009 and 2010).

100,000 inhabitants in panel A and the number of homicides of unionists per 100,000 unionists in panel B. It must be stressed that the figures used for homicides of unionists were taken from ENS documents and not from the figures that the government collects on union homicides. In other words, this indicator for union homicides uses the total number reported by the ENS for 1995–2009 for both murders and the number of individuals affiliated with trade unions in Colombia. The rate for union homicides in 2009 was 5.9 per 100,000 union members. The rate for the total population was 35 per 100,000 inhabitants in the same year. In other words, the homicide rate for the total population is 6 times larger than the homicide rate for individuals affiliated with unions in Colombia. To see this clearly, note the difference in scale for the two panels in figure 2. The union homicide rate in 2007 (4.7) was the lowest since 1986 (the first year for which data were recorded). The rate of 5.9 per 100,000 unionists is equal to the homicide rate for the total population in countries such as the United States and Uruguay during 2009.

Both union and general population homicide rates have decreased significantly in Colombia, but the union homicide rate has decreased more quickly than the rate for the total population. This is shown in figure 3, where the ratio between the union member homicide rate and the total homicide rate in Colombia is presented. As can be seen, the homicide rate for unionists as a percentage of the rate for the total population has been decreasing since 2001.

**FIGURE 4. Homicide Rate of Union Members and Ratio of Union Member Homicides to Total Homicides for Vulnerable Groups, 2001–09<sup>a</sup>**



Source: Authors' calculations based on data from the Office of the Vice President (2009) and ENS (2009).

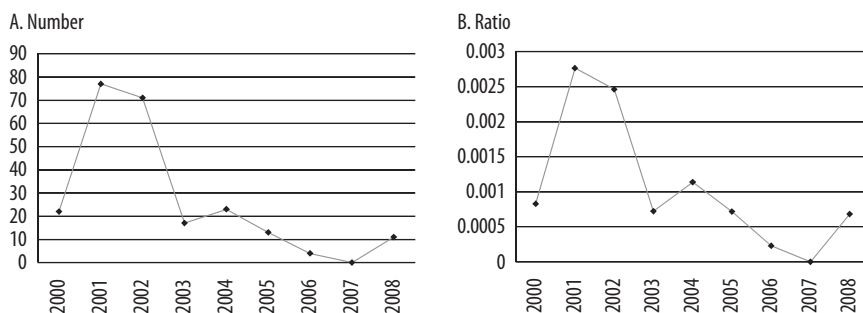
a. Vulnerable groups correspond to union members, council members, journalists, mayors and former mayors, teachers, and the indigenous population.

In other words, progress in reducing union homicides has been greater than progress in reducing homicides in the general population.

Data from the Office of the Vice President (OVP) confirm the mid-term trend observed in the ENS-reported homicides of union members (see Office of the Vice President 2009). The office uses the figures from the Observatory of Human Rights, which are lower than the ENS figures, but the mid-term trend is the same. For example, panel A in figure 4 shows the ENS union homicide rate and the OVP rate from 2001 to 2009.<sup>7</sup> Both sources show that the rate fell between 2001 and 2008. In fact, the reduction in the union homicide rate is greater with ENS data (see ENS 2009) than with the data from the Office of the Vice President (2009).

Panel B shows the ratio between union homicides and total homicides in vulnerable groups from 2001 to 2009. As seen, the figure for union homicides as a percentage of homicides in vulnerable groups decreased between 2001 and 2003; thereafter the ratio remained more or less stable until 2009. That was not, however, because of an increase in homicides in vulnerable groups. In fact, according to OVP data, total homicides in vulnerable groups dropped from 2001

7. Using the data from the Office of the Vice President, we construct the homicide rate of union members as the number of homicides of union members reported by this office per 100,000 union members, using the total number of union members reported by the ENS.

**FIGURE 5. Number of Homicides of Union Leaders and Ratio of Union Leader Homicides to Total Homicides, 2000–08<sup>a</sup>**

Source: Authors' calculations based on data received from the CUT (on file with authors); National Police (2008); and Office of the Vice President (2009).

a. Union leaders correspond to members of a board of directors, treasurers, and activists.

(412 homicides) to 2009 (168 homicides). Once again, union homicides have not only fallen at a steeper rate than total homicides in Colombia but also at a steeper rate than homicides in other vulnerable groups during the period 2001–09.

The Central Unitaria de Trabajadores (CUT), the largest trade union confederation in Colombia, reports the number of homicides of union leaders between 2000 and 2008 in Colombia.<sup>8</sup> Figure 5, panel A, shows the evolution over time in the number of union leader homicides, and panel B shows the ratio between the number of union leader homicides and the total number of homicides in Colombia. As in the case of homicides of union members, the number of homicides of union leaders decreased steadily between 2001 and 2007. As shown in panel A, the CUT did not report any homicides of union leaders during 2006 and 2007; the number of union leader homicides reported for 2008 was 11. Panel B shows that the reduction in the number of homicides of union leaders in Colombia was larger than the reduction in total homicides between 2000 and 2007.

Despite the large reduction in violence against union members observed during the last nine years, Colombia still has the highest level of violence against unionists in the world. According to the International Trade Union Confederation (ITUC), Colombia had the largest number of trade union

8. The CUT divides the homicides of union members between union activists, members of boards of directors, and unionized workers. We include the first two groups as part of the group of “union leaders.”



**TABLE 1. Total Number of Homicides of Union Members, ITUC and Local NGO Figures**

Country	Source	2006	2007	2008	2009
Colombia	ITUC <sup>a</sup>	78	39	49	48
	ENS <sup>b</sup>	76	39	49	47
Venezuela	ITUC <sup>a</sup>	0	0	4	0
	PROVEA <sup>c, d</sup>	—	53	29	46
Guatemala	ITUC <sup>a</sup>	0	4	9	16
	MSICG <sup>e</sup>	1	12	12	16

a. ITUC (2007–09).

b. ENS (2009).

c. PROVEA (2008–09).

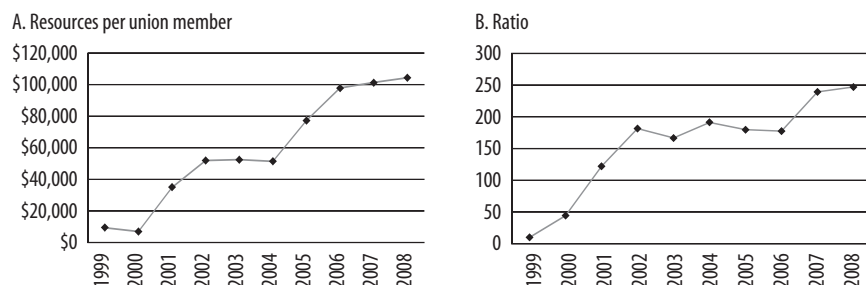
d. Crespo (2007).

e. MSICG (2010).

homicides in 2009 (48), followed by Guatemala (16), Honduras (12), and Mexico (6). A closer look at original sources in different countries reveals that while the ITUC report for Colombia almost exactly coincides with the ENS report for the 2006–09 period, for other countries, such as Venezuela and Guatemala, the story is slightly different. Table 1 presents the number of homicides of union members in Colombia, Venezuela, and Guatemala for 2006–09, as reported by the ITUC and by the local human rights agency in each of the three countries. The local human rights agency reporting the number of killings of union members is, for Colombia, the Escuela Nacional Sindical (ENS); for Venezuela, the Programa Venezolano de Educación-Acción en Derechos Humanos (PROVEA); and for Guatemala, the Movimiento Sindical, Indígena, y Campesino Guatemalteco (MSICG). As can be seen in the table, while the ITUC report for Colombia coincides almost exactly with what the ENS reports, the ITUC report clearly underestimates the level of violence against union members in Venezuela and Guatemala. Given the biases in the ITUC reports for other countries (and not for Colombia), the ITUC figures should be handled with care in constructing rankings of each country's share of violence against union members in the world.

The resources allocated by Colombia to the protection of union members and the number of union members protected have increased steadily over the last ten years. Panel A of figure 6 shows the evolution over time in the per union member amount of resources allocated (in real 2009 Colombian pesos) to protect union members.<sup>9</sup> While in 1999 the Colombian government invested

9. Most protection schemes provided by the government consist of bulletproof cars, police protection, or bodyguards.

**FIGURE 6. Resources Allocated to Protect Union Members and Number of Members Protected per 100,000 Members, 1999–2008<sup>a</sup>**

Source:—Authors' calculations based on data received from the Ministry of Social Protection (on file with authors) and from ENS (2009).  
a.—In real 2009 Colombian pesos.

less than COP\$10,000 in protection services per union member per year,<sup>10</sup> by 2008 the amount was more than 10 times larger, about COP\$100,000 per union member per year.<sup>11</sup> Panel B shows the number of union members with government protection (per 100,000 union members) for the same time period. In 1999 about 10 union members were protected for every 100,000 unionists. By 2008 the figure increased to about 250 unionists protected per 100,000 union members (see Ministerio del Interior y de Justicia 2009).

To summarize, the stylized facts provided so far depict a picture that differs from the one drawn by union leaders to block economic reforms in Colombia. Using any of the available data sources (from ENS, CUT, or the Colombian government), we observe a continuous decrease in violence against union members and union leaders in Colombia. Not only has security been greater for union members and leaders than for the total population, but it has been greater than for other vulnerable groups. Last, the government has steadily increased the resources allocated to the protection of union members and the number of union members receiving government protection over the last ten years.

We now turn to the empirical exercise, in which we estimate the causal impact of union activities on the union homicide rate, using data from Colombian states for the years 2000 through 2008.

10. About US\$5.00.

11. About US\$50.00.

## Data Used in the Empirical Exercise

In order to test the hypothesis that greater union activity causes more homicides of union members and union leaders, we use a panel that includes data from the Colombian states (a political division similar to a U.S. state) on violence against union members, violence against union leaders, different types of union activity, the homicide rate for the total population, per capita income, and proxy variables for both government presence and protection and for paramilitary and guerrilla presence. Table 2 presents some descriptive statistics on the main data used in the empirical analysis.

### *Violence against Union Members and Union Leaders*

Since the year 2000, both the Escuela Nacional Sindical and the Human Rights Observatory at the Office of the Vice President of Colombia have reported the number of homicides of union members in Colombia per year and per state. Although the two sources differ in the number of homicides of union members reported, with the ENS figures being larger, the evolution of the numbers over time is very similar in the two sources, as described above (see figure 4, panel A). The ENS also reports the number of union members in each state.<sup>12</sup> We use the homicide rate for union members in Colombia (for both sources), defined as the number of homicides of unionists per 100,000 unionists.<sup>13</sup> This will be our dependent variable in the empirical exercise. Furthermore, the CUT reports the number of homicides of union members case by case, indicating whether the victim was a union activist, a member of a board of directors, or a unionized worker. With that information, we construct the number of homicides of union leaders and the homicide rate for union members by state and year, from 2000 to 2008.<sup>14</sup> These variables will also be used in some of the empirical exercises as a measure of violence against union members. Yet another variable that we will use in our robustness checks is the number of reported threats to union members per 100,000 union members. This variable captures another

12. ENS reports figures for the number of union members by state every two years. We interpolate, using the average between the available years, in order to fill the gaps.

13. The homicide rate (the number of homicides per 100,000 individuals or members of a group) is the most standard measure used in the academic literature.

14. We do not have estimates on the number of union leaders per state and year. Therefore, we define the homicide rate of union leaders as the number of homicides of union leaders per 100,000 union members. If the ratio between union leaders and union members remains relatively constant over time and across states, then this normalization is innocuous.

**TABLE 2. Descriptive Statistics on the Main Data Used in the Empirical Analysis<sup>a</sup>**

<i>Variable</i>	<i>Unit</i>	<i>Number of observations</i>	<i>Period</i>	<i>Source</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Minimum</i>	<i>Maximum</i>
<i>Union activity</i>								
<b>Type I union activity (ENS)</b>	<b>Number/100,000 labor force</b>	<b>191</b>	<b>2000–08</b>	<b>ENS</b>	<b>3171</b>	<b>1544</b>	<b>1502</b>	<b>11149</b>
Unionization rate								
<b>Type II union activity (ENS)</b>	<b>Number/100,000 unionists</b>	<b>112</b>	<b>2005–08</b>	<b>ENS</b>	<b>81</b>	<b>208</b>	<b>0.0</b>	<b>1149</b>
Wage pacts		112	2005–08	ENS	23	93	0.0	656
Wage agreements		112	2005–08	ENS	57	142	0.0	1124
<b>Type III union activity (MPS)</b>	<b>Number/100,000 unionists</b>	<b>252</b>	<b>2000–08</b>	<b>MPS</b>	<b>282</b>	<b>731</b>	<b>0.0</b>	<b>7735</b>
Work stoppages		252	2000–08	MPS	278	731	0.0	7735
Strikes		252	2000–08	MPS	4	13	0.0	137
<i>Violence against union members</i>								
Union members (ENS)	Number/100,000 unionists	261	2000–08	ENS	28.8	60.0	0.0	561.8
Union leaders <sup>b</sup>		261	2000–08	CUT	8.4	37.4	0.0	552.5
Union workers <sup>c</sup>		261	2000–08	CUT	22.6	54.1	0.0	561.8
Unionized teachers		261	2000–08	MPS	13.2	22.9	0.0	192.4
Threats		261	2000–08	ENS	50.3	213.8	0.0	3161.6
<i>Controls</i>								
Total homicide rate (excluding union members)	Number/100,000 inhabitants	243	2000–08	Police/DANE	54.2	35.1	6.2	194.7
GDP per capita <sup>d</sup>	Pesos, millions	243	2000–08	DANE	5.0	4.0	1.4	28.0
Police arrests	Number/100,000 inhabitants	243	2000–08	OVP	12.1	14.7	0.5	98.6

		<i>Attacks on civilians</i>						
Guerrilla (FARC and ELN) Paramilitary (AUC)	Number/100,000 inhabitants	243	2000–08	OVP	2.4	3.2	0.0	21.5
	Number/100,000 inhabitants	243	2000–08	OVP	0.8	2.0	0.0	16.3
<i>Instrumental variables<sup>a</sup></i>								
Percentage of full-time employees	Number/100,000 inhabitants	212	2000–08	DANE	464.2	480.9	1.8	1869.2
Social security payments per capita	Pesos, thousands	212	2000–08	DANE	41.0	40.2	0.1	134.7
Industrial energy consumption per capita	Kilowatts	212	2000–08	DANE	249.7	237.4	0.2	1166.7
Number of industry establishments	Number/100,000 inhabitants	212	2000–08	DANE	11.2	9.6	0.4	43.3
<i>Population</i>								
Number of unionists		261	2000–08	ENS	29,224	63,188	178	374,997
Population		243	2000–08	DANE	1,555,859	1,537,496	215,979	7,155,052

Sources: Author's compilation.

a. AUC (Autodefensas Unidas de Colombia [United Self-Defense Forces of Colombia]); CUT (Central Unitaria de Trabajadores de Colombia [Central Union of Workers]); DANE (Departamento Administrativo Nacional de Estadística [National Administrative Department of Statistics]); ELN (Ejército de Liberación Nacional de Colombia [National Liberation Army of Colombia]); ENS (Escuela Nacional Sindical [National Union School]); FARC (Fuerzas Armadas Revolucionarias de Colombia [Revolutionary Armed Forces of Colombia]); MPS (Ministerio de Protección Social [Ministry of Social Protection]); OVP (Office of the Vice President of the Republic of Colombia).

b. Activists and members of boards of directors.

c. Non-leader union members.

d. The value reported for 2007 is approximated. GDP per capita at the state level for 2008 is not available; we approximate it by using the growth rate from 2006 to 2007 and 2007 GDP per capita.

e. To obtain the values for 2007 and 2008, we use the growth rate of tax revenues from industry and commerce.

dimension of violence against unionists in Colombia, which was reported by the ENS by state and year from 2000 to 2008.

### *Trade Union Activity*

Data are available for different types of union activity by state and year between 2000 and 2008. We divide union activity into three types. Type I refers to the unionization rate, which captures the most basic type of union activity; type II refers to wage agreements and pacts between unionized workers and firms; and type III refers to active acts of protest, such as strikes, work stoppages, street marches, and hunger strikes. For type I, we use ENS data on the number of unionized workers by state and year from 2000 through 2008. With this information and the data on the active labor force by state and year, we construct the unionization rate (the number of unionized workers as a percentage of the active labor force in each state and year). For type II, we use both ENS<sup>15</sup> and Ministry of Social Protection data on wage agreements and negotiations between firms and trade unions. For type III, we use Ministry of Social Protection data on strikes and work stoppages and ENS data on other types of union activity, such as street protests, strikes, hunger strikes, lawsuits, and marches.

In order to control for the fact that larger states normally have more union members and thus more union activity of all types, we measure union activity per 100,000 union members. These will be our direct measures of the intensity of union activity by state and by year. When we run the empirical exercises, we will look at each type of activity separately and aggregated by type of activity (for each data source).

### *State Controls*

We include additional variables that help us control for potential determinants of violence against union members besides the intensity of union activity. In particular, we control for the level of economic development (as measured by GDP per capita), the general level of violence (as captured by the total homicide rate for each state<sup>16</sup>), government protection (as proxied by the number of police arrests per 100,000 individuals<sup>17</sup>), paramilitary and guerrilla presence

15. See ENS (2008).

16. When we calculate the total homicide rate, we subtract homicides of union members from total homicides in each state and the number of unionists from the total population.

17. Unfortunately, the Ministry of Justice in Colombia has only aggregate data on the amount of resources invested in the protection of union members and does not break data down by state.

(as proxied by the number of paramilitary and guerrilla attacks on civilians), and year and state fixed effects.

## Empirical Strategy

The following is the simplest specification that we use to test the hypothesis that more intense union activity leads to more violence against union members:

$$(1) \quad HRUM_{s,t} = c_1 + \gamma UA_{s,t} + \beta X_{s,t} + \varepsilon_{s,t},$$

where  $c_1$  is a constant term and  $HRUM_{s,t}$  is the homicide rate of union members<sup>18</sup> (defined as the number of homicides of union members per 100,000 unionists) in state  $s$  at time  $t$ ;  $UA_{s,t}$  is a measure of the intensity of union activity (per union member) in state  $s$  at time  $t$ ;  $X_{s,t}$  is a set of controls, such as GDP per capita, the total homicide rate, government protection, guerrilla and paramilitary attacks on civilians, and the interaction of guerrilla and paramilitary attacks with the measures of each type of union activity for each state  $s$  and year  $t$ ; and finally,  $\varepsilon_{s,t}$  is an error term.

Under the specification in equation 1,  $\gamma$  is our parameter of interest. In particular, this parameter will provide an estimate of the effect of greater intensity of union activity (as measured by the alternative figures available on different types of union actions) on the degree of violence against union members. If the claim that violence against union members in Colombia is indeed generated by the unionists' own characteristic activities, then parameter  $\gamma$  should turn out to be positive and significant when we carry out the empirical estimation of equation 1. Thus, a positive and significant  $\gamma$  would imply that, controlling for other determinants of violence against union members, a greater intensity of union activity leads to more violence against unionists.

We should note, however, that the specification in equation 1 suffers from a potential endogeneity problem.<sup>19</sup> More precisely, it can easily be argued that the intensity of union activity ( $UA_{s,t}$ ) is an endogenous variable, since it could be affected by the degree of violence against union members. In other words, it is reasonable to think that union activity might be affected by the degree of violence against union members, since union members might decrease

18. In some of the specifications that we test here, we replace the homicide rate of union members,  $HRUM_{s,t}$ , with the homicide rate of union leaders,  $HRUL_{s,t}$ . Also, in some specifications we use the threat rate (the number of reported threats against unionists per 100,000 union members) as an alternative measure of violence against union members.

19. See Angrist and Pischke (2009, chapter 4).

the intensity of their activities because of fear or increase the intensity when motivated to protest in response to increased violence. The parameter  $\gamma$  that results from the direct estimation of equation 1 by ordinary least squares (OLS) would thus be biased due to the reverse causality problem just described. The parameter  $\gamma$  estimated by OLS therefore should be interpreted only as a correlation coefficient between union activity and violence against union members and not as a causal effect from the former to the latter.

In order to solve the potential endogeneity problem that would arise from the estimation of equation 1 by OLS, we use an instrumental variables approach (IV).<sup>20</sup> In particular, we instrument the intensity of union activity using variables that affect union activity but are not simultaneously affected by the degree of violence against union members. To instrument type I (unionization rate) and type II union activity (wage agreements and pacts), we use two different measures of the degree of formality of labor markets in the industry (the percentage of full-time employees with open-ended contracts<sup>21</sup> and social security payments per capita<sup>22</sup>). To instrument type III union activity (strikes, work stoppages, and so forth), the type of union activity that expresses protest, we use two different measures of industrial activity (industrial energy consumption per capita and the number of industry establishments per capita). Our first stage regression is given by

$$(2) \quad UA_{s,t} = c_2 + \delta_1 z_{1,s,t} + \delta_2 z_{2,s,t} + \beta X_{s,t} + u_{s,t},$$

where  $c_2$  is a constant term, and  $z_1$  and  $z_2$  are the set of instruments described above, depending on the type of union activity (I and II). In particular, for type I and type II union activity,  $z_{1,s,t}$  is the proportion of full-time employees with an open-ended contract as a proportion of total population in state  $s$  at time  $t$  and  $z_{2,s,t}$  is the amount of social security payments per capita in state  $s$  at time  $t$ . Both instruments,  $z_1$  and  $z_2$ , are direct measures of the degree of formality in the labor markets. The intuition for using measures of formality to instrument type I and type II union activity is straightforward. A more formal labor market allows workers to better organize themselves to unionize and union members to negotiate wage agreements with firms. Furthermore, regulation in Colombia requires a minimum number of workers to form a union. Given the well-established relationship between firm size and the degree

20. See Wooldridge (1997).

21. Total number of full-time employees with open-ended contracts as a percentage of the labor force.

22. Total social security payments divided by the total number of inhabitants in each state.



of formality in the labor market (see World Bank 2007), our instrument for type I and II union activity makes perfect sense.

When instrumenting type I and II union activity, it is important that the measures of formality in the labor market not be endogenous to our measure of violence against union members—in other words, that violence against union members not affect the degree of formality in the labor market.

When we instrument type III union activity to estimate equation 1,  $z_{1s,t}$  is the per capita industrial consumption of energy in state  $s$  at time  $t$  and  $z_{2s,t}$  is the number of industrial establishments per capita in state  $s$  at time  $t$ . The two measures used to instrument type III union activity capture the intensity of industrial activity by state and year. Again, what is important here is that homicides of union members do not affect the two measures of industrial activity and that industrial activity correlates with type III union activity. The intuition for using industrial activity as an instrument for type III union activity is that more strikes, work stoppages, and so forth stop firms' activities and that should be reflected in our two measures of industrial activity. If this intuition is correct, we should find a significant negative correlation, *ceteris paribus*, between our two measures of industrial activity (our instruments) and type III union activity.

Yet another way to solve the reverse causality problem between violence against union members and union activity is to estimate equation 1 directly by OLS but to include a lagged value for union activity,  $UA_{s,t-1}$ , instead of the current value. That partially solves the problem of reverse causality, since it would be difficult to argue that union activity is greater in year  $t - 1$  as a response to more violence against union members in year  $t$ .

Although including a lag for union activity instead of the current value partially solves the reverse causality problem, the IV approach described above is our preferred identification strategy, as it takes care of the endogeneity problem, allowing us to isolate the causal impact, if any, of union activity on violence against union members. However, when presenting the results of the estimation of equation 1, we also report the estimation results using OLS and the OLS estimation that includes the lagged value for union activity.

## Main Results

This section describes the main results of the estimations of equation 1. As discussed before, our main interest is to test the hypothesis that, on average, a greater level of union activity leads to more violence against union members.

For this, we use different variables that proxy for union activity and for union violence, as well as different estimation strategies and time periods.

### *The Effect of Type I Union Activity on Violence against Union Members*

We use the unionization rate as the first and most basic measure of union activity. In particular, based on the data reported by the ENS on the number of unionists and by DANE (Departamento Administrativo Nacional de Estadística [National Administrative Department of Statistics]) on the active labor force by state and year, we construct the unionization rate.

Table 3 presents the results of the estimation of equation 1 when we use the homicide rate for union members as our dependent variable and the unionization rate as the measure of union activity. The results reported in table 3 show that once we control for other potential determinants of violence against union members, a higher unionization rate does not affect, positively or negatively, the degree of violence against unionists. This result is still valid when we use the one-year lag for the unionization rate or the IV approach to isolate the possible causal impact of higher unionization rates on the degree of violence against union members.

For the results reported in table 3, we use the percentage of full-time employees (number of full-time employees as a percentage of the labor force) to instrument the unionization rate. Regarding the first-stage regression results, in table 3 we report only the  $p$  value of the  $F$  statistic for excluded instruments in order to show the validity of the instrument used in the first-stage regression. (The complete first-stage results for the estimations for the three types of union activity are reported in table 6. The first-stage regressions results associated with type I union activity are presented in the first two columns of table 6.) When we use the percentage of full-time employees as an instrument of the unionization rate, the  $p$  value of the  $F$  statistic in the first stage is 0.04 (see the bottom right of table 3), leading us to reject the hypothesis that the instrument is not significant in the first stage.

### *The Effect of Type II Union Activity on Violence against Union Members*

We now use the data reported by the ENS on wage agreements and pacts to measure type II union activity. In particular, we construct a measure of the number of wage pacts and agreements per 100,000 union members (by state and year) and use this variable as an alternative measure of union activity. Unfortunately, ENS reports only data on wage agreements and pacts since 2005, so in this case we have a smaller sample.

TABLE 3. Type I Union Activity (ENS)<sup>a</sup>

Variable	OLS		Lagged		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Type I union activity	-0.003*** (0.000)	-0.002 (0.003)			-0.005*** (0.002)	-0.030 (0.035)
Type I union activity <i>t</i> -1			-0.002*** (0.000)	0.003 (0.004)		
Total homicide rate		0.129 (0.111)		0.131 (0.107)		0.094 (0.109)
GDP per capita		0.617 (3.255)		5.854* (3.241)		-10.303 (13.667)
Police arrests		-0.412 (0.292)		-0.270 (0.213)		-0.206 (0.545)
Guerrilla presence		-2.092 (5.725)		-1.063 (4.161)		-18.429 (16.890)
Paramilitary presence		20.361 (18.232)		6.095 (22.320)		102.645 (100.712)
Union act*guerrilla presence		0.001 (0.002)				0.007 (0.005)
Union act*paramilitary presence		-0.005 (0.005)				-0.033 (0.033)
Union act <i>t</i> -1*guerrilla presence				0.000 (0.001)		
Union act <i>t</i> -1*paramilitary presence				-0.000 (0.007)		
Constant	27.693*** (2.693)	4.020 (28.828)	22.718*** (2.421)	-45.767 (30.281)	34.429*** (6.364)	186.321 (223.473)
Observations	191	191	167	167	183	183
R <sup>2</sup>	0.037	0.575	0.034	0.530	.	.
FE year + state	No	Yes	No	Yes	No	Yes
State controls	No	Yes	No	Yes	No	Yes
P value of F statistic for excluded instruments	.	.	.	.	0.000	0.0409
P value of Hansen test	.	.	.	.	.	.

Source: Authors' calculations.

a. Dependent variable: union members' homicide rate; instrument for type I union activity: percent of full-time employees; robust standard errors in parentheses.

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

Table 4 reports the results of the estimation of equation 1 when we use wage agreements and pacts between firms and unions as a measure of the intensity of union activity. Using this alternative measure we do not find empirical evidence suggesting that this particular type of union activity leads to more violence against union members, even after correcting for the potential endogeneity problem. When we use wage agreements and wage pacts (as reported by ENS) as different indicators of the degree of type II union activity, the results just described are maintained (results are available on request).

In the case of type II union activity, we use both instruments (the percentage of full-time employees and social security payments per capita) in the first-stage regression and report the  $p$  value for the  $F$  statistic and the  $p$  value of the Hansen test associated with the first-stage regression in the bottom right of table 4. The  $p$  value of the  $F$  test for excluded instruments in the first stage is 0.013. Furthermore, the  $p$  value of the Hansen test in the first-stage regression is 0.13, indicating that the instruments used are indeed exogenous. (Columns 3 and 4 in table 6 report the complete first-stage results when we instrument type II union activity.)

Summarizing the results obtained so far, when we use type I and type II union activity as a measure of the intensity of union action, we find no statistical evidence supporting the claim that violence against union members in Colombia can be explained by the characteristic practices of unions.

### *The Effect of Type III Union Activity on Violence against Union Members*

We now use the figures from the Ministry of Social Protection for the other type of activities that are characteristic of unions: strikes and work stoppages.<sup>23</sup> We ask whether a greater intensity of this type of activity leads to more violence against union members.

Table 5 reports the results of the estimation of equation basic when we use the sum of strikes and work stoppages per 100,000 union members as the measure of the intensity of union activity. When we do not control for other potential determinants of the homicide rate for union members, a greater intensity of this type of union activity leads to more violence against union members. Furthermore, the effect of strikes and work stoppages becomes stronger when we use the IV approach to isolate the causal impact of these

23. The figures on strikes and work stoppages broken down by state are reported by the Ministry of Social Protection from 2000 through 2008 (on file with the authors).

TABLE 4. Type II Union Activity (ENS)<sup>a</sup>

Variable	OLS		Lagged		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Type II union activity	-0.027** (0.010)	0.035 (0.028)			-0.021** (0.010)	0.057 (0.051)
Type II union activity <i>t</i> -1			-0.145** (0.066)	0.227 (0.137)		
Total homicide rate		-0.605* (0.312)		-0.771** (0.366)		0.015 (0.086)
GDP per capita		4.483 (5.295)		13.617 (9.016)		2.093 (2.923)
Police arrests		1.369* (0.737)		0.183 (0.925)		0.400 (0.621)
Guerrilla presence		-1.369 (1.181)		0.218 (1.270)		-2.472 (3.796)
Paramilitary presence		-7.067 (9.512)		-3.903 (14.979)		0.257 (9.112)
Union act*guerrilla presence		-0.024 (0.085)				-0.014 (0.105)
Union act*paramilitary presence		0.111 (0.175)				0.120 (0.189)
Union act <i>t</i> -1*guerrilla presence				-0.678 (0.452)		
Union act <i>t</i> -1*paramilitary presence				0.382 (0.900)		
Constant	24.140*** (6.329)	-21.534 (33.860)	24.994*** (8.278)	-24.504 (38.299)	13.459*** (1.754)	-16.393 (18.015)
Observations	112	104	84	78	88	88
R <sup>2</sup>	0.009	0.741	0.008	0.834	.	.
FE year + state	No	Yes	No	Yes	No	Yes
State controls	No	Yes	No	Yes	No	Yes
<i>P</i> value of <i>F</i> statistic for excluded instruments	.	.	.	.	0.000	0.0134
<i>P</i> value of Hansen test	.	.	.	.	0.198	0.128

Source: Authors' calculations.

a. Dependent variable: union members' homicide rate; instruments for type II union activity: percentage of full-time employees and social security payments per capita; robust standard errors in parentheses.

\*\*\**p* < 0.01; \*\**p* < 0.05; \**p* < 0.1.

TABLE 5. Type III Union Activity (MPS)<sup>a</sup>

Variable	OLS		Lagged		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Type III union activity	0.035*	-0.007			0.107***	0.062
	(0.020)	(0.013)			(0.038)	(0.099)
Type III union activity <i>t</i> -1			0.000	0.005		
			(0.004)	(0.021)		
Total homicide rate		0.108		0.115		0.176
		(0.148)		(0.148)		(0.117)
GDP per capita		-14.529**		-2.192		-8.668
		(5.942)		(8.058)		(17.518)
Police arrests		0.139		0.261		-0.083
		(0.361)		(0.338)		(0.336)
Guerrilla presence		0.705		1.821		-0.469
		(1.749)		(2.330)		(7.840)
Paramilitary presence		5.653		-3.133		7.608
		(3.519)		(4.050)		(15.090)
Union act*guerrilla presence		0.005***				0.003
		(0.002)				(0.017)
Union act*paramilitary presence		0.002				-0.013
		(0.009)				(0.058)
Union act <i>t</i> -1*guerrilla presence				-0.003		
				(0.003)		
Union act <i>t</i> -1*paramilitary presence				0.019		
				(0.012)		
Constant	19.956***	86.259***	31.077***	32.051	-2.169	50.771
	(5.403)	(33.003)	(4.447)	(40.261)	(7.731)	(91.976)
Observations	252	234	224	208	203	203
R <sup>2</sup>	0.177	0.682				
FE year + state	No	Yes	No	Yes	No	Yes
State controls	No	Yes	No	Yes	No	Yes
<i>P</i> value of <i>F</i> statistic for excluded instruments	.	.	.	.	0.003	0.044
<i>P</i> value of Hansen test	.	.	.	.	.	.

Source: Authors' calculations.

a. Dependent variable: union members' homicide rate; instrument for type III union activity: industrial energy consumption per capita; robust standard errors in parentheses.

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

activities on our baseline measure of violence against unionists. However, once we control for other potential determinants (level of economic development, level of violence against the total population, and so forth) the positive impact of strikes and work stoppages loses its statistical significance under all specifications.

In the case of type III union activity, we use as an instrument in the first stage the level of industrial energy consumption per capita (as a proxy for the level of economic activity); the  $p$  value of the  $F$  statistic in the first stage is 0.044 (see the bottom right in table 5). (Columns 5 and 6 in table 6 report the complete first-stage results when we instrument type II union activity.) Yet again, using acts of active protest as a variable to measure union activity, we do not find a significant causal impact of these activities on the level of violence against unionists.

Finally, although other variables potentially affecting violence against union members have the expected sign, they are seldom statistically significant. More precisely, a higher homicide rate for the total population and a lower level of economic development (low level of GDP per capita) seem to be correlated with a higher level of violence against union members. As for guerrilla and paramilitary presence, the results consistently suggest that while the presence of guerrillas has a negative effect on the union members' homicide rate, the presence of paramilitary forces has a positive effect. However, neither of these two variables is statistically significant in any of the estimations. The sign of the coefficient on police arrests is hard to interpret since this is clearly an endogenous variable and therefore the coefficient associated with it cannot be interpreted as a causal effect on the level of violence against unionists.

### *Robustness Checks*

In order to check the robustness of the results described in the previous section, we replicate the empirical exercises described above but change the variable capturing the degree of violence against union members, change the sources of information for the number of homicides of union members, and exclude outliers.

Table 7 reports the results of the estimations when we use alternative measures of violence against union members and estimate the model for each of the three types of union activity. More precisely, we use as alternative measures the homicide rate for union leaders, the homicide rate for unionized workers (excluding leaders), the homicide rate for unionized teachers, and the threat

TABLE 6. Complete First-Stage Results for Estimations for the Three Types of Union Activity<sup>a</sup>

Variable	Type I		Type II		Type III	
	(1)	(2)	(3)	(4)	(5)	(6)
Percent full-time employees	1.701*** (0.211)	-0.689 (0.699)	0.653*** (0.176)	1.124*** (0.355)		
Social security payments <sup>b</sup>			-4.923** (1.980)	-3.734 (4.657)		
Industrial energy consumption <sup>b</sup>					-0.197*** (0.066)	0.107 (0.267)
Percent full-time employees* guerrilla presence		-0.171** (0.075)		0.084 (0.275)		
Percent full-time employees* paramilitary presence		0.126 (0.184)		-0.794 (0.929)		
Social Security payments <sup>b*</sup> guerrilla presence				0.000 (0.000)		
Social Security payments <sup>b*</sup> paramilitary presence				0.000 (0.000)		
Industrial energy consumption <sup>b*</sup> guerrilla presence						0.000 (0.000)
Industrial energy consumption <sup>b*</sup> paramilitary presence						-0.000** (0.000)
Total homicide rate		0.031 (1.768)		-0.132 (0.713)		-0.484 (0.908)
GDP per capita		-342.692*** (80.037)		-20.180 (30.648)		-37.215 (37.952)
Police arrests		0.607 (5.447)		0.506 (2.400)		0.402 (2.185)
Guerrilla presence		30.174 (28.037)		-18.429 (22.798)		14.615 (12.415)
Paramilitary presence		-113.755 (86.435)		52.841 (65.856)		32.982 (29.221)
Constant	2,379*** (140.341)	7,353*** (1,082.547)	-1.993 (25.993)	-1,005.11*** (370.318)	266.136*** (22.915)	384.547 (245.234)
Observations	183	183	88	88	203	203
R <sup>2</sup>	0.265	0.967	0.272	0.946	0.043	0.508

Source: Authors' calculations.

a. Dependent variable: union activity; standard errors in parentheses.

b. Per capita.

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .



**TABLE 7. Robustness Test 1: Alternative Measures of Violence against Union Members<sup>a</sup>**

Variable	Union leaders' homicide rate		Union workers' homicide rate		Unionized teachers' homicide rate		Threat rate	
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV	(7) OLS	(8) IV
<i>Type I union activity</i>	0.000 (0.002)	-0.014 (0.018)	-0.000 (0.002)	-0.012 (0.020)	0.001 (0.002)	-0.003 (0.018)	0.021 (0.018)	-0.014 (0.173)
Observations	191	183	191	183	191	183	191	183
R <sup>2</sup>	0.575	.	0.426	.	0.501	.	0.299	.
FE year + state	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P value of F statistic for excluded instruments	.	0.041	.	0.041	.	0.041	.	0.041
P value of Hansen test	.	.	.	.	.	.	.	.
<i>Type II union activity</i>	0.008 (0.009)	0.026 (0.018)	-0.001 (0.019)	-0.004 (0.040)	0.009 (0.010)	0.019 (0.031)	-0.069 (0.061)	-0.353 (0.477)
Observations	104	88	104	88	104	88	104	88
R <sup>2</sup>	0.765	.	0.735	.	0.512	.	0.489	.
FE year + state	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P value of F statistic for excluded instruments	.	0.013	.	0.013	.	0.013	.	0.013
P value of Hansen test	.	0.431	.	0.112	.	0.006	.	0.164
<i>Type III union activity</i>	-0.002 (0.006)	-0.021 (0.044)	0.000 (0.010)	0.003 (0.070)	-0.012 (0.012)	0.011 (0.057)	-0.053 (0.122)	-0.564 (0.631)
Observations	234	203	234	203	234	203	234	203
R <sup>2</sup>	0.575	.	0.575	.	0.478	.	0.324	.
FE year + state	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P value of F statistic for excluded instruments	.	0.044	.	0.044	.	0.044	.	0.044
P value of Hansen test	.	.	.	.	.	.	.	.

Source: Authors' calculations.

a. Dependent variable: different measures of violence against union members; instrument for type I union activity: percentage of full-time employees; instruments for type II union activity: percentage of full-time employees and social security payments per capita; instrument for type III union activity: industrial energy consumption per capita; robust standard errors in parentheses. \*\*\**p* < 0.01, \*\**p* < 0.05, \**p* < 0.1.

**TABLE 8. Robustness Test 2: Alternative Source of Information for Violence against Union Members<sup>a</sup>**

Variable	Office of the Vice President		CUT	
	(1) OLS	(2) IV	(3) OLS	(4) IV
<i>Type I union activity</i>	0.002 (0.003)	-0.004 (0.024)	0.000 (0.003)	-0.025 (0.031)
Observations	191	183	191	183
$R^2$	0.623		0.548	
FE year + state	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
<i>P</i> value of <i>F</i> statistic for excluded instruments	.	0.041	.	0.041
<i>P</i> value of Hansen test	.	.	.	.
<i>Type II union activity</i>	0.028 (0.019)	0.021 (0.035)	0.007 (0.023)	0.022 (0.048)
Observations	104	88	104	88
$R^2$	0.581		0.794	
FE year + state	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
<i>P</i> value of <i>F</i> statistic for excluded instruments	.	0.013	.	0.013
<i>P</i> value of Hansen test	.	0.001	.	0.114
<i>Type III union activity</i>	-0.027* (0.015)	-0.004 (0.079)	-0.002 (0.012)	-0.018 (0.080)
Observations	234	203	234	203
$R^2$	0.619	0.613	0.673	0.45
FE year + state	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
<i>P</i> value of <i>F</i> statistic for excluded instruments	.	0.044	.	0.044
<i>P</i> value of Hansen test	.	.	.	.

Source: Authors' calculations.

a. Dependent variable: union members' homicide rate; instrument for type I union activity: percentage of full-time employees; instruments for type II union activity: percentage of full-time employees and social security payments per capita; instrument for type III union activity: industrial energy consumption per capita; robust standard errors in parentheses.

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

rate, defined as the number of threats (reported by the ENS) per 100,000 union members.

Table 7 shows that none of the three types of union activity has a significant causal impact on the different measures that we use to measure the degree of violence against union members.

Table 8 reports the results of the estimation of equation 1 when we use alternative sources of information on the number of homicides of union members. In addition to the ENS, the Colombian government and the CUT

report their own statistics on this variable. Using these alternative data sources, again we do not find any effect of any of the three types of union activity on the homicide rate of union members (as reported by the Colombian government and the CUT).

We also carried out all the empirical exercises described above using the two measures of type II union activity (wage agreements and wage pacts, as reported by the ENS) separately and the two different measures of type III union activity (strikes and work stoppages) separately and again found that all results described above were maintained. Also, we tested equation 1 using the sum of type I, II, and III union activity as our variable of interest and found, yet again, that greater intensity of the aggregate measure of union activity does not lead to more violence against union members or union leaders.<sup>24</sup> We also estimate the model in equation 1 excluding the upper and lower tails of the distribution for the two main variables used in the estimations (violence against unionists and union activity) and find that the main result is maintained.

In addition, we try nonlinear specifications in order to assess whether the effect of union activity on union violence is present only for sufficiently high levels of union activity. The results of this set of robustness checks, however, do not support this conjecture. More precisely, the effect of union activity remains not statistically significant when we estimate a nonlinear specification of the econometric model in equation 1. We also try different specifications, interacting our measures of union activity with GDP per capita and police arrests and find again that the main results are maintained.<sup>25</sup>

Finally, since different types of union activities are all likely to be correlated over time within a state, we try an estimation wherein we cluster the standard errors at the state level. However, we should stress that correcting for this type of auto-correlation in the error term would lead to over-rejecting (not under-rejecting) the null hypothesis that greater intensity of union activity leads to more union violence. As expected, when we cluster the errors at the state level, the point estimates do not change but the associated standard errors increase;<sup>26</sup> thus, the effect of union activity on union violence becomes even less significant when we cluster the error term at the state level.

24. We have not included the tables for all the robustness checks just described, but they are available on request.

25. We do not report the results of this set of robustness checks, but they are available on request.

26. Results are available on request.

## Concluding Remarks

This paper studies the evolution and determinants of violence against union members in Colombia for the 2000–08 period. Using different data sources and different indicators of violence against union members, we show that contrary to the claim used by different NGOs and union members (in Colombia and abroad) to block important economic reforms such as free trade agreements, there has been a significant decline in violence against unionists during the last nine years. We go one step further. Using panel data for Colombian states between 2000 and 2008, we test the claim that “most of the violence against trade unionists is a result of the victims’ normal union activities.”<sup>27</sup> Using different data sources and estimation techniques, we find no statistical evidence supporting that claim. These results suggest that, on average, violence against unionists in Colombia is neither systematic nor targeted.

Evidence complementing the evidence presented in this paper shows that out of more than 220 investigations of union member killings handled by the Office of the Attorney General in Colombia since 2007, only in eighteen cases (about 8 percent) was a direct link found between the homicide and the victim’s involvement in trade union activities; in eight cases (3.6 percent) a mix of involvement in trade union activities and links to illegal armed groups was found (see ANDI 2011).

Of course, any murder is a very serious matter and even more so when the driving motivation for the crime is the victim’s ideological or political stance. However, an evaluation of the progress made in confronting violence against unionists in Colombia must necessarily look at the figures and the statistical evidence and study specific indicators for the results. This is especially necessary if the conclusions of such an assessment are to be used for measures as important as blocking an economic reform.

27. See USLEAP (2008).

## Comment

**Gustavo Suárez:** One of the main responsibilities of economic research is to inform public policy debates through the collection and analysis of data. The interesting paper by Mejía and Uribe is an important contribution to understanding the heated and relevant debate on violence against union members in Colombia. At first glance, the statistical analysis of a social problem involving the loss of human life may appear callous, but ignoring systematic empirical evidence in any debate may in fact hinder the effective adoption of public policies aimed precisely at solving the problem.

The paper by Mejía and Uribe provides three sets of results about homicides rates of union members in Colombia. This discussion briefly summarizes the three sets of results to highlight areas deserving further scrutiny.

### International Context

In their first set of results, the authors provide an international perspective on the severity of violence against union members in Colombia, particularly in the context of Latin America. Citing survey data from the International Trade Union Confederation up to 2009, Mejía and Uribe document that union members experience higher homicide rates in Colombia than in any other country.

The extremely high overall rate of homicides in Colombia is commonly cited as a major explanation for its high rate of homicides against union members. To understand the power of this argument, further research should compare Colombia with other countries not only in terms of the rate of homicides of union members, but also in terms of the ratio of homicide rates of union members to overall homicide rates. Although they do not make it explicit, Mejía

The views expressed here are those of the discussant and do not necessarily reflect those of the Federal Reserve System or its Board of Governors.

and Uribe are probably aware of the importance of finding the appropriate comparison group, since they focus mainly on Latin America, where homicide rates, as reported by the UN Office on Drugs and Crime, are generally very high.

Future research may be useful also to understand the Colombian experience in historical perspective. Although there are practically no homicides of union members in advanced countries, as suggested by the survey data from the International Trade Union Confederation, these countries experienced major and sometimes deadly disputes between firms and unions over the twentieth century. Some of the main examples of these disputes are found in the mining industries in developed countries.<sup>1</sup> The not-so-distant experiences of developed countries suggest relevant questions for the present. Did union members experience significant levels of violence in the recent past in developed countries? What can we learn from those experiences to gain a better understanding of the current situation in Colombia?

## Recent Trends in Colombia

In their second set of results, Mejía and Uribe document that the homicide rates of union members have decreased faster than those for the general population since 2001. In addition, the authors document that homicide rates of unionists have decreased when compared with those of other vulnerable groups, such as journalists and elected local officials. In an impressive data collection effort, the authors buttress their analysis with the study of a wide range of series.

An interesting extension to the analysis consists of developing a unifying framework to understand the connections between all series studied by Mejía and Uribe. For example, the homicide rate among union members, defined as the ratio of union member homicides ( $H_U$ ) to the unionized population ( $U$ ), can be expressed as

$$(1) \quad \frac{H_U}{U} = \frac{H_U}{H_p} \times \frac{H_p}{P} \times \left(\frac{U}{P}\right)^{-1},$$

where  $H_p$  is the overall number of homicides and  $P$  denotes total population. This expression shows that decreases in homicide rates of union members

1. The infamous Ludlow massacre in the United States during the Progressive Era illustrates the deadly disputes between the corporate sector and mining unions. See, for example, Andrews (2008).

can be explained by combinations of reductions in the fraction of homicides whose victims are union members; reductions in overall homicide rates; and increases in the unionization rate. This decomposition may be used as a tool to parse out the relative contributions of changes in overall homicide rates and changes specific to the unionized sector to explain the evolution of the homicide rate for union members.

## The Effect of Union Activity

In the third and final set of results, Mejía and Uribe study the relationship between violence against union members and union activity. The authors propose three different measures of union activity: unionization rates; wage agreements and pacts; and protests (for example, strikes). The empirical strategy exploits variation across different geographical units in Colombia over time. The baseline regression explains violence against union members by using measures of union activity and other important controls, including overall homicide rates, GDP per capita, proxies for government protection, and measures of guerrilla and paramilitary activity.

To address the potential endogeneity of union activity, the authors instrument unionization rates and wage agreements with measures of the degree of formality of labor markets: the percentage of full-time employees and the amount of per capita social security payments. Similarly, the authors instrument strikes and other forms of union protest with measures of industrial activity: per capita energy consumption and per capita number of industrial establishments.

The authors select plausible instruments for isolating an exogenous source of variation of union activity. However, I suggest that the authors or other researchers take a deeper look into some of challenges to their instrumental variable approach and other potential sources of bias in their regressions.

First, the authors document that the instrumental variables (IV) estimate of the coefficient of interest is generally statistically insignificant across different measures of union activity. However, many readers may find striking that generally no other explanatory variable is statistically significant. The results leave us with no positive evidence on the determinants of union activity. Our understanding of the results could be improved by investigating this puzzle. Two possible explanations that require further scrutiny are the small sample of the regressions or a case of serious but not extreme multicollinearity.<sup>2</sup>

2. Notice that the *R* squares of the OLS regressions appear to be especially large.

Second, the authors focus on solving the potential endogeneity problem of the explanatory variable that they are most interested in: union activity. However, they themselves argue that another important determinant of the dependent variable is also endogenous: government protection, measured in terms of the rate of police arrests.<sup>3</sup> Unfortunately, the endogeneity of other control variables generally makes the IV estimate of the coefficient on union activity inconsistent.<sup>4</sup>

Third, the analysis of some of the first-stage regressions suggests some tensions in the way that the authors interpret their instruments. As instruments for unionization rates, for example, the authors propose two measures of the degree of formality of labor markets: social security payments and the proportion of full-time employees with open-ended contracts. The results of the corresponding first-stage regression appear to give mixed signals about the interpretation proposed by the authors that union activity is stronger where formal employment is more prevalent. In particular, the proportion of full-time employees with open-ended contracts predicts higher unionization rates but social security payments predict lower unionization rates.

Fourth, the authors focus exclusively on biases arising from endogeneity of explanatory variables. However, the broader literature on the economics of crime has given a lot of attention to measurement error as an additional important source of bias.<sup>5</sup> Certain types of measurement error may also bias OLS estimates of the coefficient of interest. For example, consider a case in which underreporting of homicides against union members is more severe where union activity is weaker because union members and their families have fewer channels and support networks to report homicides and thereby create public awareness of the link between homicides and union activity. In this case, measurement error is likely to bias the coefficient on union activity upward.<sup>6</sup>

Finally, debates about delicate topics that deal with human life almost inevitably force researchers to choose their words very carefully. Mejía and Uribe identify the hypothesis of “targeted” violence against union members

3. A similar case can be made about the endogeneity of the overall homicide rate.

4. As a simple robustness test, the authors may consider comparing their regressions with and without the other potentially endogenous explanatory variables that are not instrumented.

5. See Gibbs and Firebaugh (1990) and Levitt (1996).

6. Another measurement aspect of the data may require an explicit discussion by the authors: the assignment of violent events by geographical units (*departamentos*) within Colombia. Are violent events assigned to the home *departamento* of the union member or are they assigned to the *departamento* where the event takes place?



with a positive relationship between union activity and homicide rates against union members. In that interpretation, union members are “targeted” where unions are more visible or stronger. However, targeted violence could be interpreted very differently. For example, union members could also be “targeted” where unions are weaker, which suggests a negative relationship between union activity and homicide rates against union members. Would their test be able to identify a situation in which both types of “targeted” violence against union members take place?

## Looking Ahead

The work of Mejía and Uribe suggests several interesting avenues for future research, perhaps beyond the scope of the paper. First, the authors focus on one direction of the relationship between homicide of union members and union activity. The converse relationship is a very interesting question in its own right, namely, is violence against union members deterring union activity in Colombia? In general, economists are still looking for a solid understanding of the determinants of union activity, so empirical contributions in this area are needed.

Second, as documented in figure 6 of the paper, the Colombian government has increased the amount of money spent on protecting union members. Have the government’s expenditures been effective in reducing the homicide rate among union members? Have they been effective in protecting all union members or only union leaders? And how do the expenditures in Colombia compare with those in other countries?

To conclude, the extremely interesting work of Mejía and Uribe is a major contribution to a very relevant debate for Colombia and to the understanding of labor relations and crime. The contribution of this paper is especially important because Mejía and Uribe compile a substantial amount of hard-to-find data on the topic of violence against union members and illustrate the relevance and limitations of those data. In addition, the authors help us understand the problem in terms of the main themes and methods of the broader literature of the economics of crime. Given the importance and the controversial nature of the topic, we should expect some researchers to disagree with the conclusions of this work and other researchers to explore extensions of it. In any case, the work of Mejía and Uribe will be a necessary reference for all of those future studies.

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