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Is Violence Against Union Members in Colombia Systematic and Targeted?*

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Abstract

Violence against union members in Colombia has been at the center of a debate for several years now. Union leaders and NGOs in Colombia and abroad continuously argue that free trade agreements with Colombia should be blocked based on the failure of the current Colombian government to protect union members from targeted killings. We first look at the evolution over time of the indicators for violence against union members and union leaders. In particular we show (using different indicators and data sources) that violence against unionists in Colombia has shown a significant decline over the last seven years. Then, we use available panel data to study the determinants of violence against union members and union leaders. We make special emphasis on testing the claim that a greater intensity in the characteristic activities of unions (such as strikes, wage negotiations, etc.) leads to more violence against union members and union leaders. Using different data sets, data sources and estimation methods, we find no statistical evidence supporting this claim. These results suggest that, on average, violence against unionists in Colombia is neither systematic nor targeted.

Keywords: Violence, Targeted Killings, Unions, Union Activity, Colombia.
JEL Classification Numbers: J51, J52, K42.

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1 Introduction

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, NGOs and union leaders in Colombia, Europe, Canada, and the U.S. 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 "Most of the violence against trade unionists is a result of the victims normal union activities. 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, on their part, have argued that under the current administration homicides of union members have increased. For instance, in a recent letter to the Permanent Representatives of the EU Member States, John Monks, the 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 (CUT) [Central Union of Workers], the Confederación General del Trabajo (CGT) [General Confederation of Labour], and the Confederación de Trabajadores de Colombia (CTC) [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..." The topic of violence against union members in Colombia even reached the debates in the previous U.S. presidential campaign. More precisely, in a debate in New York, President Obama pointed to abuses in Colombia as the reason for his opposition to the FTA with Colombia, including labor leaders he said are being targets for assassination on a consistent basis.[1] On its part, the Colombian government defends itself, explaining that huge efforts have been made in order to protect unionists. During President Uribe's speech last year responding to a message sent by a U.S. congressman, he argued that there were 6,000 people in Colombia receiving personal protection. Of these, a fourth of them (1,500) were union members. And so the debate goes on, with many points of view contributing to the discussions, while FTAs continue to be blocked.

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[1]See voanews.com (2008), and beaconbroadside.com (2008).

Despite the serious claims used to block economic reforms, the (abundant) available evidence is rarely used to support these allegations. What are the specific indicators for violence against union members in Colombia? How do they compare with other countries in the region? Has there been any progress in solving this 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, councilmen, mayors, and teachers). We also compare the level of violence against unionists in Colombia with that for other Latin American countries. Then, using panel data evidence 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, etc.) help explain the levels of violence against union members in Colombia. In other words, testing this hypothesis is a first step towards knowing whether (on average) union members in Colombia are targeted and killed because of their involvement in union activities, or, conversely, that unionism is a dangerous activity in Colombia in that union membership increases the chances of being a target of violence. Should this hypothesis be proved wrong, however, would suggest that the argument being used to block economic reforms such as the FTAs with the U.S., Canada and Europe is not supported by the available evidence.

Using different data sources and indicators we show that there has been a remarkable decrease in homicides (both in absolute numbers and in terms of 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 (ENS) - 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 and councilmen). Despite the large reduction in the levels of violence against union members in Colombia, the country still ranks very high when compared to other countries in Latin America and 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 don't find evidence supporting the main argument that has been used by union members in Colombia and abroad, which states 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, this situation is in no way generalized, nor is it valid to use the argument of generalized violence against union members to block economic reforms such as FTAs.

The contribution of this paper is two-fold. First, on policy grounds, this paper contributes to a heated debate about the degree, evolution over time, and determinants of violence against trade union members in Colombia. Second, on academic grounds, 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 et al., 1998; Levitt, 1999; Gaviria and Pages, 2002; Bushway and Reuter, 2008; and Di Tella et al., 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 and Berril, 1992; Jenness, 1995), this paper is, to the best of our knowledge, the first one in the academic literature on crime to assess whether the inherent characteristics (activities) of a given group in the population is an important determinant of violence against its members.

The paper is organized as follows. Section two provides some measures of the importance of unions in the Colombian economy and compares the unionization rate in Colombia with that for other countries in Latin America. Also, this section presents the main stylized facts related to the evolution of different indicators of violence against union members in Colombia and describes some of the measures taken by the Colombian government to confront this problem. Section three presents a thorough description of the data used in the empirical exercise and explains the empirical strategy; section four presents the main results and robustness checks. Finally, section five contains the concluding remarks.

2   Stylized Facts and Data

The ENS reports that the total number of unionized workers in Colombia is about 810,000 for 2009. However, according to the census conducted by the three confederation of workers in Colombia and directly reported to the Ministry of Social Protection by the Unions, the total number of unionists in Colombia is about 1.4 million (data for 2008)[2]. If one takes the figure from the ENS, the unionization rate in Colombia is about 4.1%, whereas the figure is about 7% if one uses the data from the Unions' census[3]. Compared to other countries in

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[2]As the difference in the two figures suggest, there is an unsolved debate between the Unions and the Colombian government regarding the total number of unionized workers in Colombia.

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

the region, Colombia has a relatively low unionization rate. For instance, the unionization rate in Venezuela is about 11%, is 7% in Peru, 11.2% in Mexico, 13% in Uruguay, 3% in Guatemala, and 1% in Ecuador[4].

Figure 1 shows the evolution over time in the number of union member homicides in Colombia for the 1986-2008 period, as reported by the Escuela Nacional Sindical - ENS (National Union School) (A), and the ratio between union member homicides and total homicides in Colombia.

As can be observed in panel (A) of Figure 1, murders of unionists increased steadily between 1986 and the mid-nineties, with a peak of 274 unionists murdered in 1996. During the second half of the nineties, the number again increased until 2002, when it began to fall steadily all the way to the latest data in 2009. 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 been reduced every year since 2003 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.

[INSERT Figure 1 here]

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 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 the Government handles on union homicides. In other words, this indicator for union homicides uses the total number reported by the ENS for the 1995 to 2009 time period for both murders and for the number of individuals affiliated in trade unions in Colombia. The rate for union homicides in 2009 was 5.9. The rate for the total population was 35 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 in 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 data was recorded). This rate of 5.9 per 100,000 unionists is equal to the homicide rate for the total population in countries such as the U.S. and Uruguay during 2009.

[INSERT Figure 2 here]

Both homicide rates, union and general, have been significantly reduced in Colombia. But the union homicide rate has responded more quickly than the rate for the total population. This can be seen in Figure 3, where the ratio between the union member homicide

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[4]See Newunionism (2010). Available at: http://www.newunionism.net/State_of_the_Unions.htm

rate and the total rate is presented. As can be seen in this Figure, the homicide rate for unionists as a percentage of the homicide rate for the total population has been decreasing since 2001. In other words, progress in reducing union homicides has been greater than progress in reducing homicides in the general population.

[INSERT Figure 3 here]

Data from the Office of the Vice President confirms the mid-term trend observed in the ENS-reported homicides of union members (see Office of the Vice President, 2009). This 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, Figure 4 (A) shows the ENS union homicide rate and the same rate from the Office of the Vice President from 2001 to 2009.[5] Both data sources show 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).

Figure 4 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 shows a reduction between 2001 and 2003 and then the ratio remains more or less stable until 2009. This was not, however, because of an increase in homicides in vulnerable groups. In fact, according to data from the Office of the Vice President, total homicides in vulnerable groups went down from 2001 (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 - 2009.

[INSERT Figure 4 here]

The Central Unitaria de Trabajadores (CUT, the largest trade union confederation in Colombia) reports data on the number of homicides of union leaders[6] between 2000 and 2008 in Colombia. Figure 5 (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 can be seen in panel (A), the CUT did not report any homicides of union leaders during 2006 and 2007, and for 2008 the number of union leader homicides reported was

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[5]For the Office of the Vice President, we construct the homicide rate of union members as the numeber of homicides of union members reported by this Office per 100,000 union members, the latter reported by the ENS.

[6]The CUT divides the homicides of union members between union activists, members of boards of directors, and unionized workers. We take the first two groups as being part of the group of 'union leaders.'

11. Panel (B) shows that the reduction in the number of homicides of union leaders in Colombia was larger than the reduction in the total homicides between 2000 and 2007.

[INSERT Figure 5 here]

Despite the large reduction in violence against union members observed during the last nine years, Colombia still ranks as the country with the highest levels of violence against unionists in the world. According to the International Trade Union Confederation - ITUC, Colombia is the country with the largest number of trade union homicides (48 in 2009), followed by Guatemala (16), Honduras (12) and Mexico (6). Despite revealing the same rank, a closer look at original sources in different countries reveals that while for Colombia the ITUC report almost exactly coincides with the ENS report for the last four years, 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 during the last four years, as reported by the ITUC and by the local human rights agency in each of the three countries.[7] As can be seen in this table, while the ITUC report for Colombia almost exactly coincides with what the ENS reports, for Venezuela and Guatemala the ITUC report clearly underestimates the levels of violence against union members in these countries. Given these biases in the ITUC reports for other countries (and not for Colombia), the ITUC figures should be handled with care when using their statistics to construct rankings and each country's share of violence against union members in the world.

[INSERT Table 1 here]

The amount of resources allocated to the protection of union members and the number of union members protected have increased steadily over the last ten years. Figure 6 (A) shows the evolution over time in the per capita amount of resources allocated (measured in real Colombian pesos of 2009) to protect union members.[8] While in 1999 the Colombian government invested less that $COP 10,000[9] in protection services per union member per year, by 2008 this amount was more than 10 times larger (about $COP 100,000[10] per union member per year). Panel (B) shows the number of union members with government protection (per 100,000 union members) for the same time period. In 1999 there were about 10 union members protected for every 100,000 unionists. By 2008 this figure increased to

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[7]For the case of Colombia the local human rights agency reporting the number of killings of union members is 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.

[8]Most protection schemes provided by the government consist of bullet-proof cars, police protection or body guards.

[9]About $5 dollars.

[10]About $50 dollars.

about 250 unionists protected per 100,000 union members (see Ministerio de Interior y Justicia, 2009).

[INSERT Figure 6 here]

To summarize, the stylized facts provided so far depict a different picture from the one drawn by union leaders to block economic reforms in Colombia. Using either of the available data sources (ENS, CUT, or the Colombian Government) we observe a continuous decrease in violence against union members and union leaders in Colombia. Not only has progress in security been greater for union members and leaders than for the total population, but it has been greater than for other vulnerable groups. Lastly, 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, where we estimate the causal impact of union activities on the union homicide rate, using data of Colombian States for the years 2000 through 2008.

2.1   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 Colombian States (political division similar to a 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.

2.1.1   Violence Against Union Members and Union Leaders

Since the year 2000, both the union's NGO - ENS, 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 over time is very similar in the two sources, as described above (see Figure 4 (A)). The ENS also reports the number of union members in each State.[11]   We use this information on the homicide rate for union members in Colombia (for both sources),

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[11]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.

defined as the number of homicides of unionists per 100,000 unionists.[12] This will be our dependant 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 this information, we construct the number of homicides of union leaders and the homicide rate for union leaders[13] by state and year, from 2000 to 2008. This variable 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 dimension of violence against unionists in Colombia which is reported by the ENS by State and year from 2000 to 2008.

2.1.2 Trade Union Activity

Data is 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. On Type I union activity, the unionization rate, the ENS reports 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). On Type II union activity, both the ENS[14] and the Ministry of Labor report data on wage agreements and negotiations between firms and trade unions. Finally, regarding Type III union activity, the Ministry of Labor reports data on strikes and work stoppages, and the ENS reports data on other types of union activity such as street protests, strikes, food 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

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[12]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.

[13]We don't have estimates on the number of union leaders per State and year. Thus, 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 accross States, then this normalization is innocuous.

[14]See ENS (2008a).

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).

2.1.3 State Controls

We include additional variables that help us control for other potential determinants of violence against union members different than 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[15]), government protection (as proxied by the number of police arrests per 100,000 individuals[16]), paramilitary and guerrilla presence (as proxied by the number of paramilitary and guerrilla attacks on civilians), and for year and State fixed effects.

3 Empirical Strategy

In order to test the hypothesis that more intense union activity leads to more violence against union members, the following is the simplest specification that we test:

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

where c_1 is a constant term; $HRUM_{s,t}$ is the homicide rate of union members[17] (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 unions' 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 to 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; finally, $\varepsilon_{s,t}$ is an error term.

Under the specification in equation 1, γ is our parameter of interest. In particular, this parameter will provide an estimate of the effect of a 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

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[15]When we calculate the total homicide rate, we subtract homicides of union members from the total homicides in each State and the number of unionists from the total population.

[16]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 it down by State.

[17]In some of the specifications that we will test below, 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.

in Colombia is indeed generated by the unionists' own and characteristic activities, then parameter γ should turn out to be positive and significant when we carry out the empirical estimation of equation 1. Thus, a positive and significant γ 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[18]. 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 the intensity of their activities based on fear or increase the intensity when motivated to protest in response to increased violence. The parameter γ 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. As such, the parameter γ estimated by OLS should only be interpreted 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) in order to solve the potential endogeneity problem. 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[19] and social security payments per capita[20]). To instrument type III union activity (strikes, work stoppages, etc.), 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 will be given by:

$$UA_{s,t} = c_2 + \delta_1 z_{1s,t} + \delta_2 z_{2s,t} + \beta X_{s,t} + u_{s,t}. \tag{2}$$

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 the case of type I and type II union activity, $z_{1s,t}$ is the the proportion of full time employees with an open-ended contract as a proportion of total population in State s at time t, and $z_{2s,t}$ is the amount

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[18]See Angrist and Pischke (2009, ch. 4).

[19]Total number of full time employees with open ended contracts as a percentage of the labor force.

[20]Total social security payments divided by the total number of inhabitants in each state.

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 and union members to better organize themselves to unionize and 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 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 does 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, etc. stop firms' activities and this 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 including a lagged value for union activity, $UA_{s,t-1}$, instead of the current value. This 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 will also report the estimation results using OLS and the OLS estimation that includes the lagged value for union activity.

4 Main Results

4.1 The Effect of Type I Union Activity on Violence Against Union Members

In this section 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 the active labor force (reported by DANE) 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 employes as a percentage of the labor force) to instrument the unionization rate. Regarding the first stage regression results, in Table 3 we only report 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[21]. 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.

4.2 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 only reports data on wage agreements and pacts since 2005, so we have a smaller sample in this case.

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[21]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.

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 don't find empirical evidence suggesting that this particular type of union activity leads to more violence against union members, even after correcting for potential endogeneity problems. When we use separately wage agreements and wage pacts (as reported by ENS) the results just described are maintained and are available upon 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.[22]

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

4.3 The Effect of Type III Union Activity on Violence Against Union Members

We will now use the figures from the Ministry of Labor for the other type of activities that are characteristic of unions: strikes and work stoppages[23] (the type of union activity that expresses itself as protest). We will 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 1 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 don't 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 activities on our baseline measure of violence against unionists. However, once we control for other potential determinants (the level of economic development, the level of violence against

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[22] Colums 3 and 4 in Table 6 report the complete first stage results when we instrument Type II union activity.

[23] The figures on strikes and work stoppages broken down by State are reported by the Ministry of Labor from 2000 through 2008.

the total population, etc.) the positive impact of strikes and work stoppages looses 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)[24].

Yet again, using active acts of protest as a variable to measure union activity, we don't find a significant causal impact of this activities on the levels 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 lower levels of economic development (low levels of GDP per capita) seem to be correlated with higher levels of violence against union members. As for guerrilla and paramilitary presence, the results consistently suggest that while the former has a negative effect on the union members' homicide rate, the latter has a positive effect. However, none 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 variables and, as such, the coefficient associated with it cannot be interpreted as a causal effect on the level of violence against unionists.

In order to check the robustness of the results described thus far, we now turn to describing a battery of robustness checks that we undertake.

4.4   Robustness Checks

In order to check the robustness of the results described in the previous section, we replicate the empirical exercises described above but changing the variable capturing the degree of violence against union members, changing the sources of information for the number of homicides of union members, and excluding 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 activities. 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 rate, defined as the number of threats (reported by the ENS) per 100,000 union members.

This Table 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.

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[24]Colums 5 and 6 in Table 6 report the complete first stage results when we instrument Type II union activity.

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. Particularly, in addition to the ENS, the Colombian government and the CUT report their own statistics on this variable. Using these alternative data sources we, yet again, don't find any effect of either 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 separately - wage agreements and wage pacts (as reported by the ENS), 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, finding, yet again, that a greater intensity of the aggregate measure of union activity does not lead to more violence against union members or union leaders.[25] 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, finding that the main result is maintained.

Also, we try non-linear 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 non linear specifications of the econometric model in equation 1. We also try different specifications where we interact our measures of union activity with GDP per capita and police arrests, finding that the main results are maintained[26].

Finally, since different types of union activities are all likely to be correlated over time within a state, we try an estimation where 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 a greater intensity 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[27]; thus, the effect of union activity on union violence becomes even less significant once we cluster the error term at the state level.

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[25] Although we have not included the Tables for all the robustness checks just described, they are available from the authors upon request.

[26] Although we don´t report the results of this set of robustness checks, they are available from the authors upon request.

[27] These results are available from the authors upon request.

5   Concluding Remarks

This paper studies the evolution and determinants of violence against union members in Colombia for the 2000 - 2008 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 of violence against unionists during the last 8 years. We go one step further and, using panel data for Colombian States between 2000 and 2008, test the claim that "most of the violence against trade unionists is a result of the victims normal union activities".[28] Using different data sources and estimation techniques we find no statistical evidence supporting this claim.

Complementary evidence to the one presented in this paper shows that out of more than 220 investigations of union member killings handed by the office of the Attorney General in Colombia since 2007, only in 18 cases (about 8%) the judicial investigation found a direct link between the homicide and the victim's involvement in trade union activities, and in 8 cases (3.6%) found a mixture of involvement in trade union activities and links to illegal armed groups.

Of course, any murder is a very serious matter and 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 such a serious problem as violence against unionists in Colombia must necessarily look at the figures and the statistical evidence, and study specific indicators for the results. And this is particularly so if the conclusions of such an assessment are to be used for such significant measures as blocking an economic reform.

6   References

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[28]See USLEAP (2008).

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Figure 1

(A)

**Union Member Homicides
1986-2009**

(B)

**Number of Union Member Homicides/
Number of Total Homicides
1986-2009**
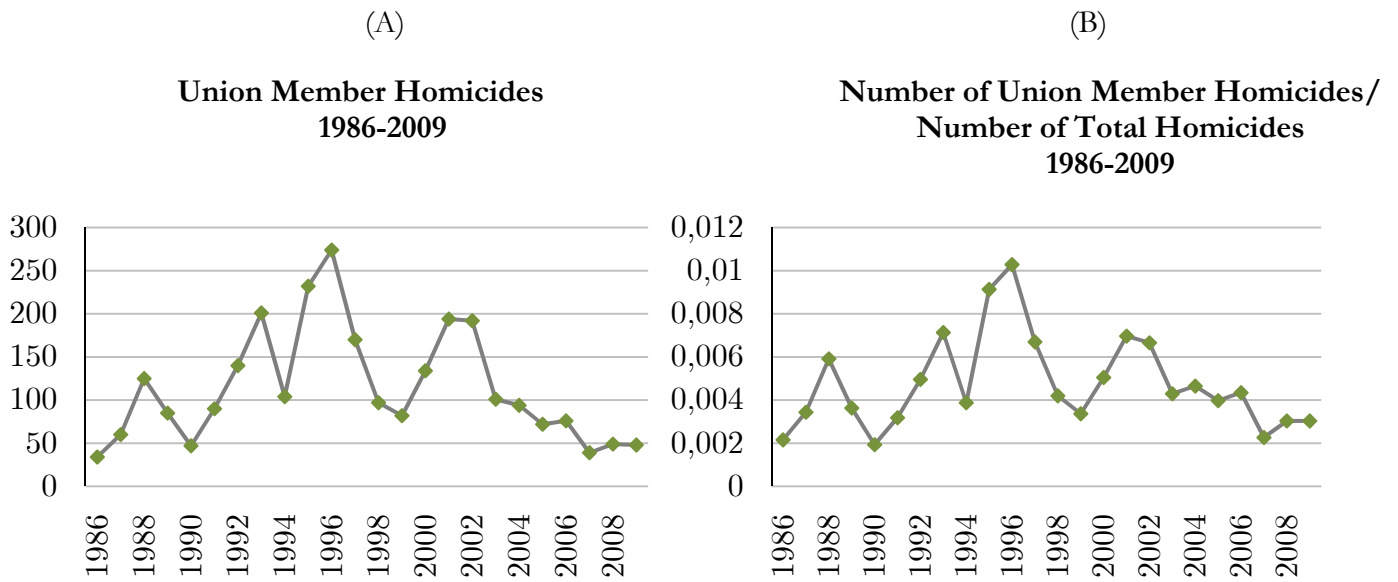
Source: Authors' calculation based on data from Escuela Nacional Sindical (ENS), (2009 and 2010); Office of the Vice President (2008); and National Police (2008 and 2010).

Figure 2

(A)

**Homicide Rate
1995-2009
(Number of homicides per 100,000 inhab.)**

(B)

**Homicide Rate for Union Members
1995-2009
(Number of homicides per 100,000 unionists)**
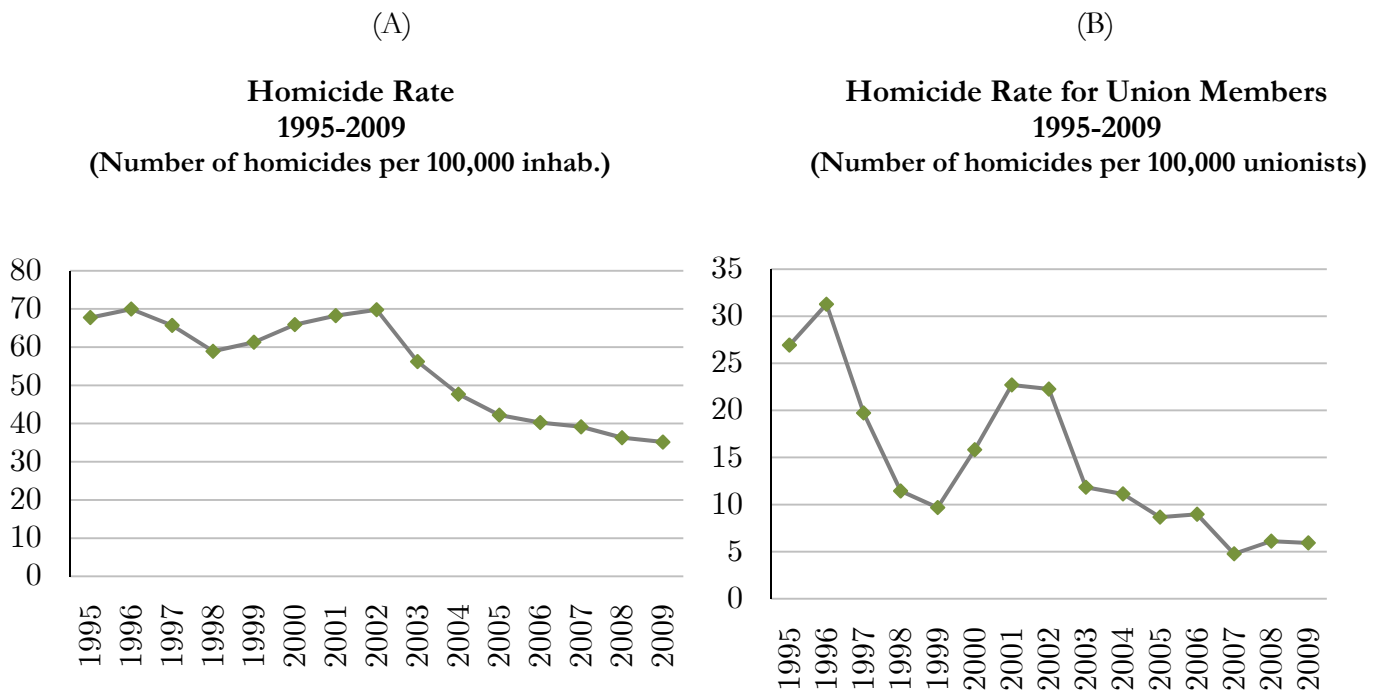
Source: Authors' calculation based on data from the National Police (2008 and 2010), Office of the Vice President (2009), DANE (National Statistics Department), and ENS (2009 and 2010).

Figure 3

**Union Member Homicide Rate / Total Homicide Rate
1995-2009**

Figure 4

(A)   (B)

**Unionists' Homicide Rate in Colombia
2001-2009**
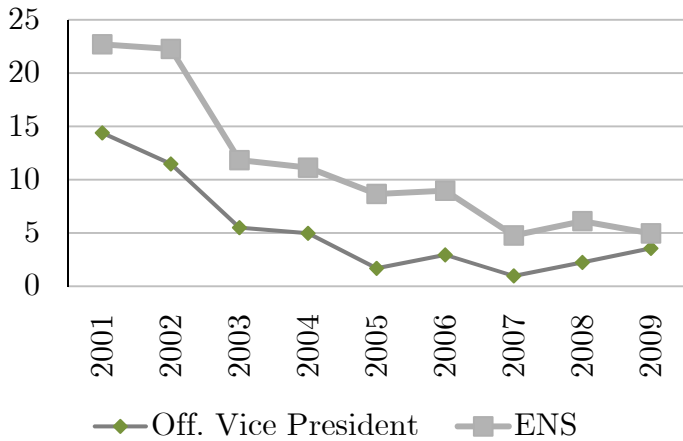
**Unionists' Homicides/Total Homicides
of Vulnerable Groups in Colombia*
2001-2009**
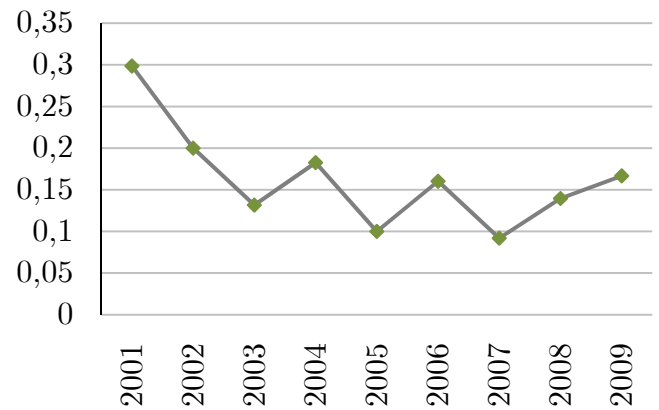
Figure 5

(A)

Homicides of union leaders*
2000-2008

(B)

Number of Union Leader Homicides/
Number of Total Homicides
2000-2008
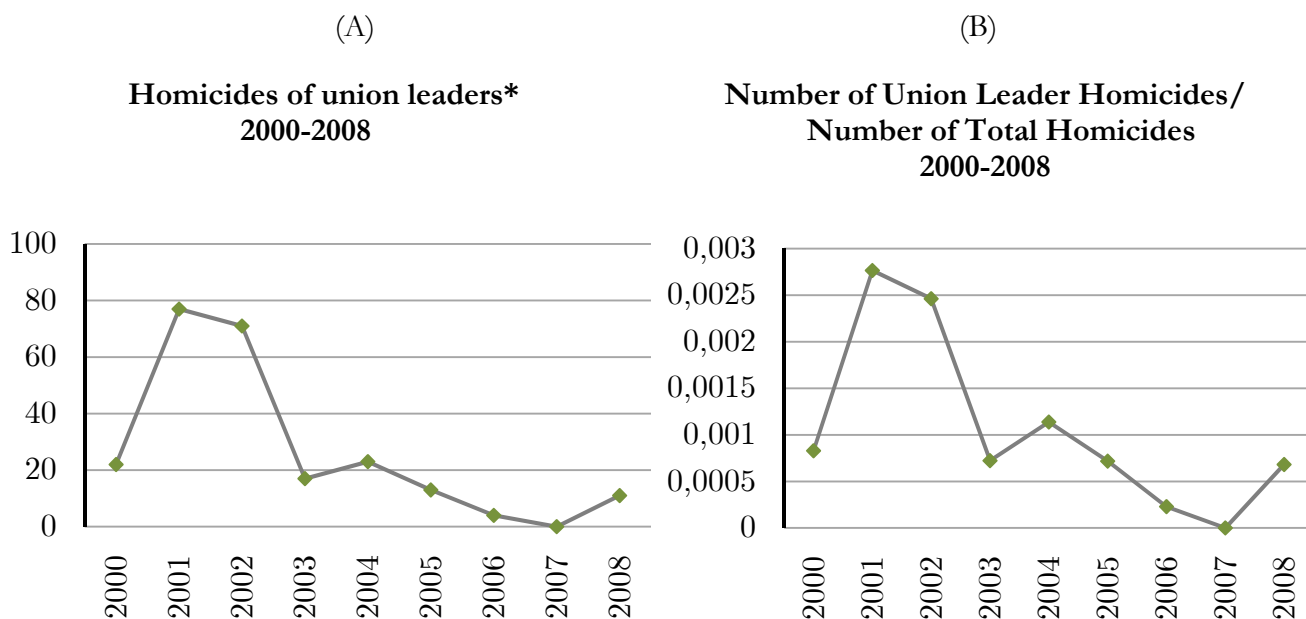
Source: Authors' calculation based on data from the Central Union of Workers (CUT) (2009); the National Police (2008); and Office of the Vice President (2009).

(*) Union leaders correspond to: member of a board of directors, activist, and treasurer.

Figure 6

(A)

Amount of Resources Allocated to Protect Unionists
1999-2008
(2009 real $COP)

(B)

Number of Unionists with Gov. Protection
1999-2008
(Number per 100,000 unionists)
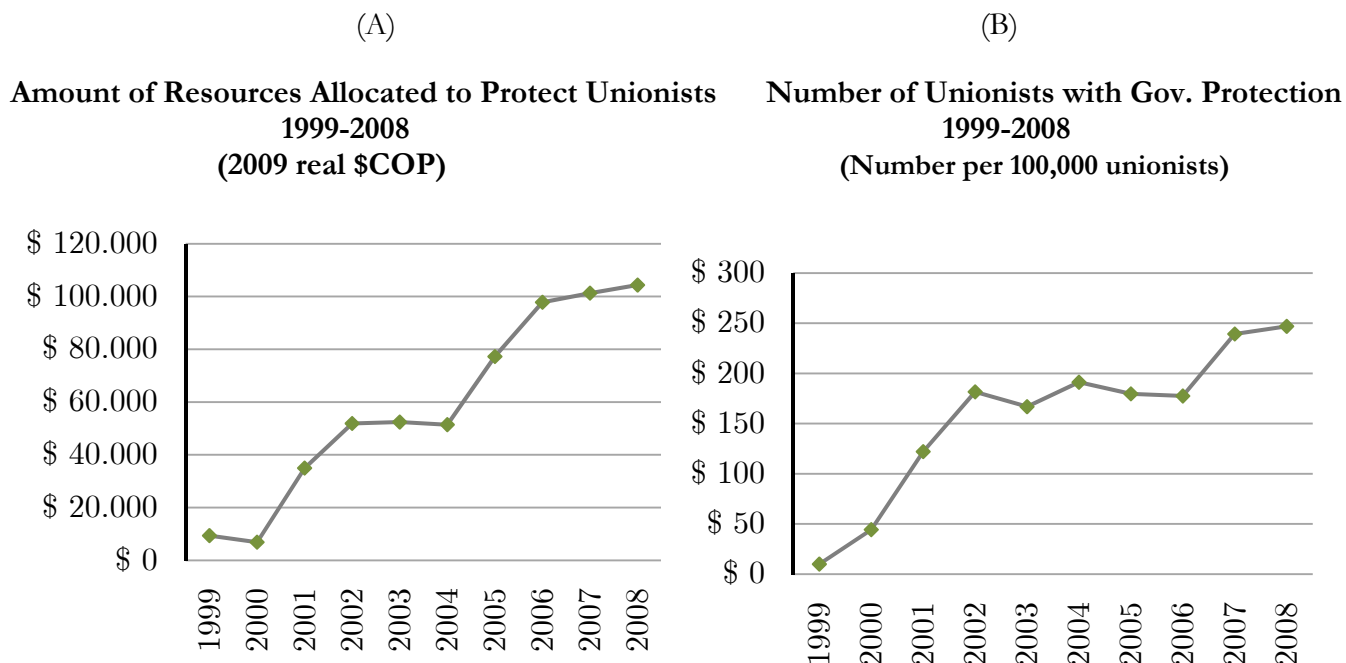
Source: Authors' calculation based on data from the Ministry of Labor (MPS) (2009); and ENS (2009).

Figure 7

**Homicides of unionized teachers
2000-2009**
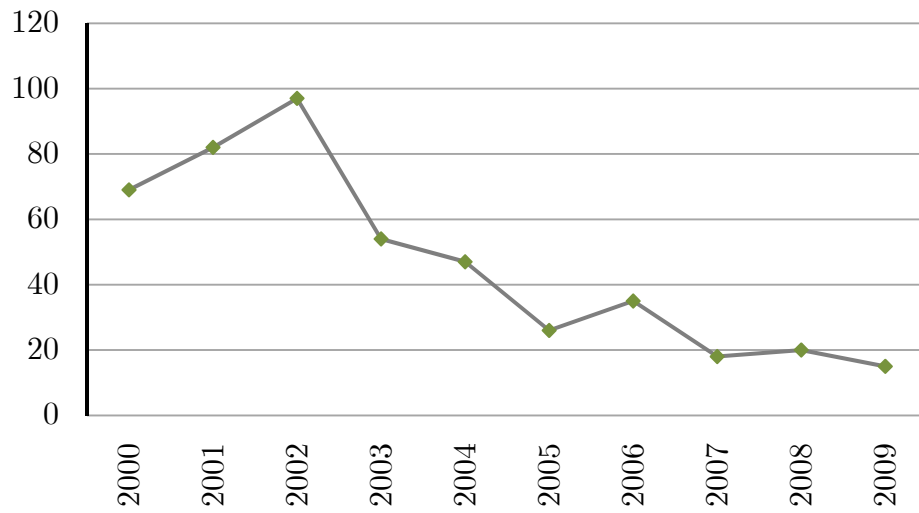
Table 1
Total number of homicides of union members: ITUC vs. Local NGOs

Country	Source	2006	2007	2008	2009
Colombia	**ITUC (a)**	**78**	**39**	**49**	**48**
	ENS (b)	76	39	49	47
Venezuela	**ITUC (a)**	**0**	**0**	**4**	**0**
	PROVEA (c,d)	-	53	29	46
Guatemala	**ITUC (a)**	**0**	**4**	**9**	**16**
	MSICG (e)	1	12	12	16

ENS= *Escuela Nacional Sindical*
ITUC= International Trade Union Confederation
MSICG=*Movimiento Sindical, Indígena y Campesino Guatemalteco*
PROVEA= *Programa Venezolano de Educación-Acción en Derechos Humanos*

Sources:
(a) International Trade Union Confederation (ITUC) (2007-2009). Annual Survey of violations of trade union rights. Available at: http://survey07.ituc-csi.org/; http://survey08.ituc-csi.org/; http://survey09.ituc-csi.org/.
(b) Escuela Nacional Sindical (ENS) (2009).
(c) PROVEA (2008-2009). http://www.derechos.org.ve/informes-anuales/ultimo-informe-anual; http://www.derechos.org.ve/informes-anuales/informe-anual-2009
(d) Crespo, Carlos (2007). Más igualdad y menos libertad.   Venezuela Real, Información y Opinión 17 de diciembre de 2007. Available at: http://venezuelareal.zoomblog.com/archivo/2007/12/17/mas-igualdad-y-menos-libertad.html
(e) Movimiento Sindical, Indígena y Campesino Guatemalteco (MSICG) (2010)
http://www.elciudadano.cl/wp-content/uploads/guatemala-ddhh-11.pdf

Table 2

Variable	Units	Number of observations	Period	Source	Mean	Std. dev.	Min	Max
Union activity								
Type I union activity (ENS)	**#/100,000 labor force**							
Unionization rate		**191**	**00-08**	**ENS**	**3171**	**1544**	**1502**	**11149**
Type II union activity (ENS)	**#/100,000 unionists**	**112**	**05-08**	**ENS**	**81**	**208**	**0,0**	**1149**
Wage pacts		112	05-08	ENS	23	93	0,0	656
Wage agreements		112	05-08	ENS	57	142	0,0	1124
Type III union activity (MPS)	**#/100,000 unionists**	**252**	**00-08**	**MPS**	**282**	**731**	**0,0**	**7735**
Work stoppages		252	00-08	MPS	278	731	0,0	7735
Strikes		252	00-08	MPS	4	13	0,0	137
Violence against union members								
Union members (ENS)	#/100,000 unionists	261	00-08	ENS	28,8	60,0	0,0	561,8
Union leaders (a)		261	00-08	CUT	8,4	37,4	0,0	552,5
Union workers (b)		261	00-08	CUT	22,6	54,1	0,0	561,8
Unionized teachers		261	00-08	MPS	13,2	22,9	0,0	192,4
Threats		261	00-08	ENS	50,3	213,8	0,0	3161,6
Controls								
Total homicide rate (excluding union members)	#/100,000 inhab.	243	00-08	Police/DANE	54,2	35,1	6,2	194,7
Gross domestic product per capita (GDP pc)(c)	COP millon pc	243	00-08	DANE	5,0	4,0	1,4	28,0
Police arrests	#/100,000 inhab.	243	00-08	Vice President	12,1	14,7	0,5	98,6
Attacks to civilians (presence)								
Guerrilla (FARC and ELN)	#/100,000 inhab.	243	00-08	Vice President	2,4	3,2	0,0	21,5
Paramilitary (AUC)	#/100,000 inhab.	243	00-08	Vice President	0,8	2,0	0,0	16,3
Instrumental Variables (d)								
Percentage of full time employees	% 100,000 inhab.	212	00-08	DANE	464,2	480,9	1,8	1869,2
Social security payments	COP thousand pc	212	00-08	DANE	41,0	40,2	0,1	134,7
Industrial energy consumption	Kw pc	212	00-08	DANE	249,7	237,4	0,2	1166,7
Number of industry establishments	# 100,000 inhab.	212	00-08	DANE	11,2	9,6	0,4	43,3
Population								
Number of unionists		261	00-08	ENS	29224	63188	178	374997
Population		243	00-08	DANE	1555859	1537496	215979	7155052

Notes:

ENS=Escuela Nacional Sindical (Unions' NGO)

MPS= Ministerio de Protección Social (Ministry of Labor)

CUT= Central Unitaria de Trabajadores de Colombia (Central Union of Workers)

DANE = Departamento Administrativo Nacional de Estadísticas (Nacional Administrative Department of Statistics)

Vice President= Office of the Vicepresident of the Republic of Colombia

pc = per capita

(a) Activists and members of the board of director

(b) Union workers = non leader union members

(c) The value reported for 2007 is approximated. GDPpc for 2008 is not available. We approximate it using the growth rate from 2006 to 2007 and 2007 GDPpc.

(d) To obtain the values for 2007 and 2008 we use the growth rate of tax revenues from industry and commerce.

Table 3

Type I union activity (ENS)
Dependant variable: Union members' homicide rate

VARIABLES	OLS		LAGGED		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Type I union activity	-0.003***	-0.002			-0.005***	-0.030
	(0.000)	(0.003)			(0.002)	(0.035)
Type I union activity t-1			-0.002***	0.003		
			(0.000)	(0.004)		
Total homicide rate		0.129		0.131		0.094
		(0.111)		(0.107)		(0.109)
GDP pc		0.617		5.854*		-10.303
		(3.255)		(3.241)		(13.667)
Police arrests		-0.412		-0.270		-0.206
		(0.292)		(0.213)		(0.545)
Guerrilla presence		-2.092		-1.063		-18.429
		(5.725)		(4.161)		(16.890)
Paramilitary presence		20.361		6.095		102.645
		(18.232)		(22.320)		(100.712)
Union act*guerrilla presence		0.001				0.007
		(0.002)				(0.005)
Union act*paramilitary presence		-0.005				-0.033
		(0.005)				(0.033)
Union act t-1*guerrilla presence				0.000		
				(0.001)		
Union act t-1*paramilitary presence				-0.000		
				(0.007)		
Constant	27.693***	4.020	22.718***	-45.767	34.429***	186.321
	(2.693)	(28.828)	(2.421)	(30.281)	(6.364)	(223.473)
Observations	191	191	167	167	183	183
R-squared	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 F-excluded inst.	.	.	.	.	0.000	0.0409
P-value Hansen test	.	.	.	.	.	.

Instrument for type I union activity: Percentage of full time employees
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4

Type II union activity ENS
Dependant variable: Union members' homicide rate

VARIABLES	OLS		LAGGED		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Type II union activity	-0.027**	0.035			-0.021**	0.057
	(0.010)	(0.028)			(0.010)	(0.051)
Type II union activity t-1			-0.145**	0.227		
			(0.066)	(0.137)		
Total homicide rate		-0.605*		-0.771**		0.015
		(0.312)		(0.366)		(0.086)
GDP pc		4.483		13.617		2.093
		(5.295)		(9.016)		(2.923)
Police arrests		1.369*		0.183		0.400
		(0.737)		(0.925)		(0.621)
Guerrilla presence		-1.369		0.218		-2.472
		(1.181)		(1.270)		(3.796)
Paramilitary presence		-7.067		-3.903		0.257
		(9.512)		(14.979)		(9.112)
Union act*guerrilla presence		-0.024				-0.014
		(0.085)				(0.105)
Union act*paramilitary presence		0.111				0.120
		(0.175)				(0.189)
Union act t-1*guerrilla presence				-0.678		
				(0.452)		
Union act t-1*paramilitary presence				0.382		
				(0.900)		
Constant	24.140***	-21.534	24.994***	-24.504	13.459***	-16.393
	(6.329)	(33.860)	(8.278)	(38.299)	(1.754)	(18.015)
Observations	112	104	84	78	88	88
R-squared	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
P-value F-excluded inst.	.	.	.	.	0.000	0.0134
P-value Hansen test	.	.	.	.	0.198	0.128

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
Dependant variable: Union members' homicide rate

VARIABLES	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 t-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 pc		-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 t-1*guerrilla presence				-0.003		
				(0.003)		
Union act t-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-squared	0.177	0.682				
FE year + state	No	Yes	No	Yes	No	Yes
State controls	No	Yes	No	Yes	No	Yes
P-value F-excluded inst.	.	.	.	.	0.003	0.044
P-value Hansen test	.	.	.	.	.	.

Instrument for type III union activity: Industrial energy consumption per capita
Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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Table 6

First stages

Dependant variable: Union activity	Type I		Type II		Type III	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
% full time employees	1.701***	-0.689	0.653***	1.124***		
	(0.211)	(0.699)	(0.176)	(0.355)		
Social security payments			-4.923**	-3.734		
			(1.980)	(4.657)		
Industrial energy consumption					-0.197***	0.107
					(0.066)	(0.267)
% full time employees*guerrilla presence		-0.171**		0.084		
		(0.075)		(0.275)		
% full time employees*paramilitary presence		0.126		-0.794		
		(0.184)		(0.929)		
Social Security payments*guerrilla presence				0.000		
				(0.000)		
Social Security payments*paramilitary presence				0.000		
				(0.000)		
Ind. energy consumption*guerrilla presence						0.000
						(0.000)
Ind. energy consumption*paramilitary presence						-0.000**
						(0.000)
Total homicide rate		0.031		-0.132		-0.484
		(1.768)		(0.713)		(0.908)
GDP pc		-342.692***		-20.180		-37.215
		(80.037)		(30.648)		(37.952)
Police arrests		0.607		0.506		0.402
		(5.447)		(2.400)		(2.185)
Guerrilla presence		30.174		-18.429		14.615
		(28.037)		(22.798)		(12.415)
Paramilitary presence		-113.755		52.841		32.982
		(86.435)		(65.856)		(29.221)
Constant	2,379***	7,353***	-1.993	-1,005.113***	266.136***	384.547
	(140.341)	(1,082.547)	(25.993)	(370.318)	(22.915)	(245.234)
Observations	183	183	88	88	203	203
R-squared	0.265	0.967	0.272	0.946	0.043	0.508

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7

ROBUSTNESS TESTS #1: ALTERNATIVE MEASURES OF VIOLENCE AGAINST UNION MEMBERS

Dependant variable: Union members' homicide rate

	Union leaders' homicide rate		Union workers' homicide rate		Uninized teachers homicides' rate		Threat rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Type I union activity	0.000	-0.014	-0.000	-0.012	0.001	-0.003	0.021	-0.014
	(0.002)	(0.018)	(0.002)	(0.020)	(0.002)	(0.018)	(0.018)	(0.173)
Observations	191	183	191	183	191	183	191	183
R-squared	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 F-excluded inst.	.	0,041	.	0,041	.	0,041	.	0,041
P-value Hansen test	.	.	.	.	.	.	.	.
Type II union activity	0.008	0.026	-0.001	-0.004	0.009	0.019	-0.069	-0.353
	(0.009)	(0.018)	(0.019)	(0.040)	(0.010)	(0.031)	(0.061)	(0.477)
Observations	104	88	104	88	104	88	104	88
R-squared	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 F-excluded inst.	.	0,013	.	0,013	.	0,013	.	0,013
P-value Hansen test	.	0.431	.	0.112	.	0,006	.	0.164
Type III union activity	-0.002	-0.021	0.000	0.003	-0.012	0.011	-0.053	-0.564
	(0.006)	(0.044)	(0.010)	(0.070)	(0.012)	(0.057)	(0.122)	(0.631)
Observations	234	203	234	203	234	203	234	203
R-squared	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 F-excluded inst.	.	0.044	.	0.044	.	0.044	.	0.044
P-value Hansen test	.	.	.	.	.	.	.	.

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 TESTS #2: ALTERNATIVE SOURCE OF INFORMATION FOR VIOLENCE AGAINST UNION MEMBERS (VAUM)

Dependant variable: Union members' homicide rate

Source of info. for VAUM	Office of the Vice President		CUT	
	(1)	(2)	(3)	(4)
VARIABLES	OLS	IV	OLS	IV
Type I union activity	0,002	-0,004	0,000	-0,025
	(0.003)	(0.024)	(0.003)	(0.031)
Observations	191	183	191	183
R-squared	0,623		0,548	
FE year + state	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
P-value F-excluded inst.	.	0,041	.	0,041
P-value Hansen test	.	.	.	.
Type II union activity	0,028	0,021	0,007	0,022
	(0.019)	(0.035)	(0.023)	(0.048)
Observations	104	88	104	88
R-squared	0,581		0,794	
FE year + state	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
P-value F-excluded inst.	.	0,013	.	0,013
P-value Hansen test	.	0,001	.	0,114
Type III union activity	-0.027*	-0,004	-0,002	-0,018
	(0.015)	(0.079)	(0.012)	(0.080)
Observations	234	203	234	203
R-squared	0,619	0,613	0,673	0,45
FE year + state	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
P-value F-excluded inst.	.	0.044	.	0.044
P-value Hansen test	.	.	.	.

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