



Citation for published version:

Rivera Celestino, M & Zarate-Tenorio, B 2016, 'Beyond Sticks and Stones: Human capital enhancement efforts in response to violent crime in Latin America', *European Journal of Political Research*, vol. 55, no. 3, pp. 531–548 . <https://doi.org/10.1111/1475-6765.12139>

DOI:

[10.1111/1475-6765.12139](https://doi.org/10.1111/1475-6765.12139)

Publication date:

2016

Document Version

Peer reviewed version

[Link to publication](#)

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Beyond sticks and stones: Human capital enhancement efforts in response to violent crime in Latin America

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Abstract. Violent crime has been commonplace in Latin America over the past decades. While existing research has made progress in explaining the rationale and outcomes of government coercive strategies against crime, it has overlooked the non-coercive strategies implemented to improve public security. It is argued in this article that political authorities make human capital enhancement efforts to shape actors' incentives about criminal activity and mitigate crime. Accordingly, it is hypothesised that violent crime increases human capital enhancement efforts, and that the effect of violent crime on human capital enhancement efforts is larger when left-oriented governments are in power because they stress actors' motivations over windows of opportunities as the main drivers of crime. Support for these hypotheses is found in a sample of Latin American democracies in the period 1990–2007.

Keywords: anti-crime policies; homicide rates; human capital spending; political ideology; Latin America

Hay poco dinero, pero hay muchas balas.

Hay poca comida, pero hay muchas balas (...)

*Hay poca educación y muchos cartuchos,
cuando se lee poco se dispara mucho*

(Calle 13, 'La Bala', *Entren los que quieren*, 2010)

Introduction

Violent crime represents one of the most pressing and troubling problems in Latin America. The region has become the deadliest worldwide, with 16.3 homicides per 100,000 inhabitants.¹ Unsurprisingly, crime is at the top of social concerns among citizens: more than a third of the 2012 Americas Barometer survey respondents perceived crime as the most pressing issue in their countries (Singer et al. 2014). Given the salience of crime phenomena, this article examines how governments respond to violent crime. Do they employ non-coercive strategies to enhance public safety? And if so, does the use of non-coercive strategies vary depending on the presence of left-leaning governments?

Unfortunately, most comparative research has overlooked the study of non-coercive responses to crime (for exceptions, see Moncada 2013; Hoelscher & Nussio 2015). Some scholars highlight that increasing criminality and citizens' perception of public insecurity benefit right-wing parties in the region² (e.g., Caldeira 2000; Holland 2013). Others emphasise how states respond to crime by reinforcing the security sector and promoting heavy-handed policies that are often related to human rights violations (e.g., Caldeira 2000;

Ahnen 2007). Although this literature has made significant progress in understanding states' coercive responses to crime, it has often ignored how governments implement non-coercive instruments to improve public security.

The lack of attention to non-coercive strategies is puzzling given that leaders have a broad repertoire of policy instruments to improve public safety, including coercive and non-coercive policy tools (Weber 1946; Gizelis 2010). To quote LaFree (1998: 9): '[T]he postwar period witnessed the tremendous growth and expansion in America of three institutions with direct relevance for crime control: criminal justice, education and welfare.' Although 'criminal justice institutions are the most directly linked to crime, increasing postwar support for education and welfare was justified for many reasons in addition to, or instead of, crime control'. Indeed, there are strong reasons to believe that states employ other strategies to fight crime that go beyond coercive ones. Moreover, different governments emphasise different causes of crime and, depending on the factors they associate most with rising criminality, they formulate different anti-crime policies. Surprisingly, very few studies have analysed non-coercive responses to crime, despite problems of social development and inequalities in access to human capital formation institutions that are often seen as causes of crime (World Bank 2011, 2013). Even studies showing that democratic governments in developing countries have more incentives to increase welfare expenditures have not considered whether and how states use social policy to mitigate crime and improve law and order (e.g., Kaufman & Segura-Ubierno 2001; Huber et al. 2008; Zarate-Tenorio 2014).

Our article is the first to analyse, in a cross-national setting, non-coercive responses to crime in Latin America. Although states have different non-coercive tools to strengthen law and order, we focus on human capital enhancement efforts in response to crime. Our main argument is that governments have incentives to improve and expand human capital among the young. This is largely because authorities are aware that young people are the main perpetrators of violent crime, anticipating that efforts towards human capital formation can decrease individuals' propensity to become involved in criminal activities. Accordingly, we hypothesise that governments will increase education spending when faced with growing levels of crime as a measure to advance public security. We further stress the role of political ideology on the implementation of anti-crime policies. Whereas leftist parties generally emphasise adverse economic conditions and the lack of opportunities as the drivers of crime, rightist parties stress the weakness of the security sector that facilitates criminal behaviour. We thus hypothesise that the effect of crime on human capital enhancement efforts will be greater in the presence of leftist governments. Our analysis provides strong support for these hypotheses from a sample of 18 Latin American democracies from the period 1990–2007.

Coercive and non-coercive responses to violent crime

The last quarter of the twentieth century hosted the greatest expansion of democracy in Latin America. Yet the wave of democratisation did very little to improve citizen security in the region. Paradoxically, many countries that experienced democratic transition also suffered a significant increase in violent crime which has hindered democratic governance and human development during the last decades.

State-level analyses show that youth bulges and lack of access to the education system are positively associated with homicide rates in the region (Rivera 2016). Likewise,

individual-level analyses identify that young males with low income and limited access to the education system are the main perpetrators of crime (Gaviria & Pagés 2002). Consistent with these findings, the World Bank (2011: 12) underlines the fact that ‘most perpetrators and victims of crime and violence are young people, mainly young men.’ Furthermore, violent crime is associated with ‘lower levels of education due to the low costs that engaging in criminal behavior has for these young people, the absence of positive social influences from mentors and peers, and from delinquency being the best income alternative for a young person without any remarkable skills’ (World Bank 2011: 18).

Unsurprisingly, public insecurity is the subject of passionate debates about how states should respond to crime and what strategies are most likely to improve citizen security. These debates highlight a number of actions, each of which can be organised around two major strands: coercive and non-coercive strategies. Coercive measures encompass law enforcement actions devised by governments to dissuade and/or mitigate crime. To enforce the law, coercive strategies require actions from the criminal judicial system and the security sector. These measures seek to constrain and/or punish violations of the law and are expected to raise the costs of crime. The continuum of coercive measures embraces different tactics such as community policing, zero tolerance and repressive policing tactics. Specifically, these strategies involve actions like increasing the number of police personnel, supporting the training of judicial actors and the police, increasing the severity of punishment, and so on. At the extreme of the continuum we find *mano dura* policies that incorporate discretionary actions, violations of due process rights and participation by military actors in policing activities (e.g., Holland 2013).

Governments can also employ non-coercive strategies to fight crime. These tactics attempt to address the social roots of crime and decrease motivations that provoke offending. Non-coercive strategies use welfare policies to advance the provision of public goods and social services. In consequence, these strategies are often associated with schooling and employment programmes that target disadvantaged segments of society, particularly those individuals that are the most likely to get involved in criminal behaviour (e.g., LaFree 1998; Berthelon & Kruger 2011).

Much research examines coercive strategies employed in response to crime. Area studies illustrate that states often react through zero tolerance tactics (i.e., reinforcement of the state security sector and the promotion of harsher punishments such as longer prison sentences and the death penalty). In some contexts, states promote *mano dura* policies, ranging from the suspension of procedural rights to military intervention in policing activities (e.g., Holland 2013). Related studies illustrate that crime and informal judicial institutions that increase police impunity often lead to systematic violations of human rights (Brinks 2008). This literature has fostered the impression that violent crime is inexorably linked to states’ coercive responses and human rights violations, exposing an important limitation of the quality of democracy in the region: the lack of the rule of law and a weak respect for human rights.

A growing literature examines an upward trend in community-oriented policing strategies in Latin America. In contrast to traditional policing models and zero tolerance strategies, community policing initiatives emphasise the need for crime prevention tactics and civil society participation in policing activities. This model seeks to empower citizens to participate in crime prevention and promote cooperation and coordination with the

police (e.g., Arias & Ungar 2009). Interestingly, several studies within this line of inquiry point out that subnational governments sometimes implement a mix of coercive and non-coercive instruments by reforming and strengthening the security sector and implementing social programmes to improve unprivileged actors' welfare (e.g., Moncada 2013; Hoelscher & Nussio 2015).

In sum, whereas many studies centre on coercive responses to public insecurity, emerging work has made progress in understanding the combined coercive and non-coercive strategies against crime at the subnational level (World Bank 2011; Moncada 2013; Hoelscher & Nussio 2015). Consistent with prior research on the politics of crime in developed countries (e.g., LaFree 1998; Entorf & Spengler 2002), these studies highlight how states implement anti-crime policies that are beyond traditional coercive approaches. In what follows, we adopt this view and explore a new theory on why national governments make human capital enhancement efforts in response to crime and how political ideology influences these decisions.

Violent crime and human capital enhancement efforts

Leading economic models suggest that political authorities have coercive and non-coercive strategies to fight crime. Becker (1968) stresses that actors compare the expected costs and benefits of crime, and thus criminal activity is more likely when the expected benefits exceed the costs of crime. This model suggests that governments can employ a variety of coercive strategies that increase the offender's expected costs of crime. It is perhaps not surprising that pundits and policy makers across the world often emphasise the importance of the criminal justice system as part of the offender's expected costs of criminal activity. Much research is consistent with this model and examines the implementation of law enforcement tactics in contexts of increasing violence and criminality. However, we can directly infer from the model that states can also employ non-coercive strategies that increase the opportunity costs of crime, decreasing actors' motives to commit crimes. In his Nobel Lecture, for example, Becker (1993: 390) emphasised that 'the amount of crime is determined not only by the rationality and preferences of would-be criminals but also by the economic and social environment created by public policies, including expenditures on police, punishments for different crimes, and opportunities for employment, schooling and training programs'.

Examples of governments using welfare policies as an instrument to fight crime are abundant in the contemporary world. These policies respond to juvenile delinquency and thus younger citizens are the main targets of social, anti-crime policies. Historically, in addition to strengthening the juvenile justice system, federal agencies and subnational governments in the United States have emphasised the need for non-coercive tactics to address juvenile violence and delinquency. These strategies seek to reduce risk factors related to youth crime by fighting school dropout and improving opportunities for academic success, providing training and opportunities for youth employment, strengthening and mobilising communities and so on. President Lyndon Johnson's Commission on Law Enforcement and the Administration of Justice stressed that 'a civil rights law is a law against crime. Money for schools is money against crime' (quoted in LaFree 1998: 10). Similar efforts are seen in Europe. In the Netherlands, for instance, the state provides training and employment opportunities for youth actors who have participated in criminal activities. In

Germany, the age groups with the largest increase in assistance payments receipts are the same as those showing the most pronounced rise in criminal activities (Pfeiffer 1998).

Turning to Latin America, consider how the Mexican government has begun to address the social roots of criminal violence. Although Peña Nieto's administration emphasises the role of the state security apparatus in recovering public order and this has often involved systematic human rights violations by state actors, a number of welfare anti-crime programmes have been implemented. In 2013, the government invested about US\$190 million in crime prevention programmes that will be carried out in areas where crime and violence are endemic or where youth actors face a high risk of falling into the ranks of criminal groups. Notably, improving human capital among the young constitutes a key dimension of anti-crime programmes as the government has prioritised boosting full-time schooling. Keeping youth at school can be expected to reduce the chance of them being recruited by criminal organisations (see Felbab-Brown 2014).

Building on these insights, we argue that an alternative tactic in fighting crime consists of deploying non-coercive strategies that are expected to affect actors' incentives to get involved in criminal activity and resort to violence against other actors. Beyond coercive strategies, we contend that governments often consider the available resources for implementing non-coercive measures against crime – most notably through social policies. Specifically, we argue that democratic governments make human capital enhancement efforts to strengthen the education system as an active response to crime. Observations of a relationship between youth and violence have a long legacy, and the empirical evidence of a nexus between youth and crime is extensive across countries (e.g., Sampson & Laub 1995). Latin America is not the exception to this empirical regularity since violent crime is mostly an urban phenomenon, carried out disproportionately by low-income young males, with limited access to the education system. In consequence, human capital enhancement efforts implemented to improve education constitute an additional, complementary strategy that states can advance to strengthen public safety in the medium and long terms. In contexts where the youth population is overrepresented in criminal activity, governments' welfare efforts towards human capital formation are expected to influence the social roots of crime.

Over the course of the past two decades, we have seen increasing interest in education worldwide. In public policy and academic realms there is longstanding awareness that education can boost economic growth, stimulate technological innovation, and improve individual earnings and social mobility (see Gift & Wibbels (2014) for a review). Similarly, there is a growing consensus that education can decrease criminal activity through an incapacitation effect since young people spend more time at school and have less time to participate in criminal activities. Moreover, there is strong evidence that education has positive effects on earnings, which can reduce crime by raising the opportunity costs of criminal activity (Lochner & Moretti 2004; Berthelon & Kruger 2011). Aware of the positive externalities of education, elected governments have incentives to reform the education system and make human capital investment efforts to fight crime. Social policy towards education is thus expected to influence actors' costs-benefit calculations about criminal behaviour. From a government's perspective, improvements in the education system and human capital investment can help address the roots of crime by increasing individuals' opportunities and their prospects for upward social mobility. Accordingly, political authorities have incentives to employ education anti-crime policies that might

mitigate the negative effects of social exclusion on crime – most notably among large youth cohorts.

An objection regarding political leaders' incentives to employ non-coercive strategies in response to crime merits consideration. Some may argue that human capital enhancement efforts are unlikely given that elected leaders cannot reap the fruits of welfare programmes during their term in office. Therefore, governments may prefer coercive over non-coercive measures to fight crime because social-policy-based strategies may not have an immediate effect on public security. Before proceeding, we will expand on why leaders consider non-coercive strategies to improve public safety.

First, by stressing the need to tackle the social roots of crime, political leaders signal their commitment to address longstanding problems of social exclusion through policies that will result in society-wide benefits. This is relevant if we consider that support for education is widespread within Latin America, largely because it benefits a larger sector of the population as compared to social security programmes. Indeed, citizens' support for education policies is widespread, and ranks markedly higher than other areas. According to the 2012 Americas Barometer survey, education is the most preferred category when individuals are asked in which area the government should make larger investments (45 per cent). This is followed by health (17 per cent) and assistance to the poor (12 per cent). As investment on human capital formation meets widespread social support, leaders have incentives to expand social policies that can aid crime reduction. To clarify, we do not mean that a majority of citizens necessarily favour welfare state efforts over coercive strategies to fight crime. According to the same survey, in some countries, citizens' demand for *mano dura* approaches like increasing punishment of criminals is higher than demand for preventive strategies (e.g., Argentina, Chile, El Salvador and Mexico). However, the opposite is true in countries such as Colombia, Costa Rica, Panama, Uruguay and Venezuela, and in the aggregate, a significant proportion of individuals prefer preventive strategies (38 per cent) over coercive strategies (47 per cent), and a few think that a combination of both is necessary (14 per cent).

Second, public policy involves a learning process in which leaders' decisions and citizens' support are shaped by previous experiences. Over the last two decades, *mano dura* policies in the region have failed to improve public security and reduce crime (e.g., Holland 2013). The failure of these policies has triggered some scepticism about their effectiveness, leading to greater support for other alternatives that are designed to improve public security. In Rio de Janeiro, for example, crime and violence have been endemic in many of the city's poorer and socially marginalised areas (*favelas*). Despite coercive tactics being the main instruments of control in these areas, recent crime reduction strategies address the social roots of crime through social welfare policies, although these do not exclude the importance of law enforcement (World Bank 2013).

Third, nongovernmental organisations such as Human Rights Watch and Transparency International often condemn human rights violations arising from the implementation of heavy-handed policies.³ Instead, international organisations and foreign donors highlight governments' commitment to social policy and the provision of public goods as an important tool for advancing peace. For instance, the World Bank (2011 : 25) underlines that 'policies and programs to encourage secondary school enrollment and completion are critical. Young people that stay connected to school are less likely to exhibit disruptive and violent behavior,

carry or use a weapon, or experiment with illegal substances.’ Taken together, international pressure to protect human rights and the promotion of educational policies to tackle public insecurity issues help us to understand the use of states’ non-coercive strategies.⁴ The following hypothesis summarises our reasoning:

H1: Violent crime is positively associated with human capital investment efforts.

Violent crime, political ideology and human capital enhancement efforts

So far, our argument suggests an independent effect of violent crime on human capital investment efforts. We argue that political ideology plays an important role in governments’ strategies to address crime.⁵ Ideological frames influence political leaders’ conceptions about the causes of crime and interpretations about how states should address issues of public concern (Ahnen 2007; Holland 2013).

Right-wing parties often stress that deviant behaviour is rooted in windows of opportunity that facilitate the commission of crime. From this perspective, criminal activity is frequently attributed to the lack of law enforcement capacity and the permissiveness of the judicial system. Unsurprisingly, right-based coalitions have supported heavy-handed policies to fight crime. In El Salvador, President Francisco Flores, of the right-wing party ARENA, introduced the Plan Mano Dura in 2003 (renamed the ‘Plan Super Mano Dura’ during the Antonio Saca administration). This programme stressed government tolerance and excessive protection for criminals as the main roots of the public security crisis, and promoted the use of area sweeps, military intervention in policing and suspension of procedural rights, which consisted of a temporary anti-gang law permitting the arrest of suspected gang members on the basis of their physical appearance (Holland 2013).

These conservative views generally contrast with a different interpretation of the causes of crime, one that emphasises absolute and relative deprivation as the main triggers of deviant behaviour. According to this view, crime arises from social exclusion and the lack of opportunities for social mobility and hence left-oriented parties tend to see investment in human capital as being instrumental in enhancing public safety. For instance, facing a security crisis in Guatemala, President Álvaro Colom emphasised the need to fight poverty in order to improve public security and reduce crime.

Contemporary Brazil is another example of how governments respond to crime by increasing social spending. Public insecurity has ranked among the most pressing problems since the country’s transition to democracy in 1985. Homicide rates almost tripled, with a national average of 21 homicides per 100,000 inhabitants throughout the period 1981–2004. Over decades, law enforcement and unlawful repressive policies were the main instruments against crime among subnational governments that generally considered crime and violence to be outcomes of the state’s permissiveness and the presence of windows of opportunity derived from the weakness of the criminal justice system (Caldeira 2000). However, in his inaugural speech in 2003, President Luiz Inacio Lula Da Silva introduced a rather different approach, highlighting the deterioration of social bonds as a cause of violent crime and stressing the need for an integral approach to fight it:

It is true that the deterioration of social ties in Brazil over the past two decades as a result of economic policies that did not favor economic growth brought a menacing

cloud to our tolerant pattern of national culture. Horrific crimes, massacres and lynching twitched and made the country from day-to-day, especially in large cities, experience a situation close to a war of all against all. Because of this, I start this mandate with the firm decision to put the federal government in partnership with the states, at the service of a public safety policy far more vigorous and efficient. A policy, that combined with health, education, among others, is capable of preventing violence, will suppress crime and restore citizens' security.

During President Lula's administration, the Brazilian government strengthened its commitment to fight crime through social policy. Based on a conception of violence and delinquency as resulting in part from social exclusion and lack of opportunities, the Brazilian government consolidated and expanded previous efforts aimed at human capital formation.⁶

Whereas we anticipate a positive effect of violent crime on human capital enhancement efforts, we expect that this effect will be greater under left and centre-left governments. Although right-wing governments have incentives to invest in welfare policies to fight crime, these efforts should be lower compared to left governments as conservative parties emphasise the use of law enforcement policies, and thus are likely to allocate more resources to coercive strategies. Conversely, leftist governments tend to support non-coercive responses to crime over other factors related to the criminal justice system. *H2* summarises this reasoning:

H2: Violent crime will have a stronger positive effect on human capital investment efforts when a leftist government is in power.

Data

We use time-series cross-sectional data for all democracies in Latin America from 1990 to 2007. We use Cheibub et al.'s (2010) classification to define our empirical universe. We have 301 country-year observations coded as democracies; yet, given data availability for other variables, our largest sample includes 219 observations for 18 countries within the region.

Our theory implies that there are several non-coercive strategies that governments use to fight crime and that human capital enhancement efforts are of primary importance among these. We focus on education spending as our main dependent variable given its theoretical relevance and the lack of data on other non-coercive strategies such as employment programmes. However, in an effort to explore other social non-coercive policies, we will also discuss the results for health spending. We measure education expenditures as a percentage of gross domestic product (GDP) using data from Huber et al. (2008), which covers our period of analysis up to 2000.⁷ We have updated the data for the 2001–2007 period using figures from the United Nations Economic Commission for Latin America and the Caribbean.⁸ Measuring human capital enhancement efforts directly is difficult given the lack of data on specific programmes and actions that states implement to improve educational systems. However, education spending reflects well a government's efforts to advance education policies and strengthen the overall educational system. In Latin America, human capital enhancement efforts in response to crime often include full-day school programmes that are related to specific operational costs such as hiring more teachers and

providing school lunches, as well increasing schools' personnel and infrastructure in order to expand access to the educational system (e.g., Berthelon & Kruger 2011; World Bank 2013).

With regards to the main independent variables, we measure violent crime using homicide rates per 100,000 inhabitants from the United Nations Crime Trends Surveys (UNCTS), reported by Allen and Flynn (2013). We calculated homicide rates using population data from Gleditsch (2002). Although violent crime includes different forms of violent offences, homicides are the most accurately measured and most severe form of violent crime (e.g., Fox & Hoelscher 2012). Given that homicide data are not available on a yearly basis for all countries, we used linear interpolation to generate a more complete dataset.⁹

We measure governments' ideology using data from Baker and Greene (2011). We use two different indicators; the first captures the political ideology of the executive, and the second the percentage of votes for leftist parties in the lower house of the legislature. Baker and Greene constructed a 20-point scale ranging from 1 (farthest left) to 20 (farthest right), which captures a party or candidate's political ideology. We took the value corresponding to each winning presidential candidate and then reversed this indicator, thus higher values indicate that the president's party is more leftist. The second indicator measures the percentage of votes for left-leaning parties in the lower house of the legislature. We added all the percentages of votes for parties with a score less or equal to ten in the original data.

The selection of control variables follows previous research on education spending in developing countries. Governments in poorer countries invest more resources on human capital to promote development (Brown & Hunter 2004). We thus incorporate the natural log of GDP per capita. We control for economic growth because economic downturns reduce available resources for education spending as they are more vulnerable to retrenchment during economic crises (Wibbels 2006). Trade openness and foreign direct investment (FDI) account for the potential influence of globalisation. While, the former is measured as exports plus imports as percentage of GDP, the latter represents net inflows of investment as percentage of GDP. We do not anticipate any specific effect of globalisation on education spending since the literature provides mixed results (Kaufman & Segura-Ubiergo 2001; Avelino et al. 2005; Huber et al. 2008).

We incorporate the percentage of the population aged 0 to 14 to control for the possibility that the size of the school-age population may increase education spending (Brown & Hunter 2004). We also control for the percentage of the aged population as the size of the population over age 65 may influence states' efforts towards other areas of social policy (i.e., health and social security) and reduce the resources available for education investment (data from the World Bank). Huber et al. (2008) argue that a longer democratic legacy results in stronger institutions and hence is likely to be related to higher social investment in the long run. We thus incorporate the cumulative number of years that a country has been classified as democratic from 1945 to the year of observation, using Cheibub et al. (2010).

Finally, we include the GINI coefficient to measure inequality. It could be argued that inequality is an underlying cause of both violent crime and education spending. States attempt to reduce inequality by increasing expenditure on education because it affects individuals' prospects for social mobility. On the other hand, Fajnzylber et al. (2002) claim to show that inequality is positively associated with homicide rates (however, see Neumayer

2003; Rivera 2016). As such, inequality is clearly a relevant control in the analyses.¹⁰ Appendix Table A1 shows descriptive statistics for all variables.

Method and results

In order to test our arguments, we employ ordinary least square (OLS) regressions with panel corrected standard errors (PCSE). All estimates include country fixed effects as the appropriate F-test indicates that unit heterogeneity is present in our data. The fixed-effect estimator also allows us to account for potential effects of time-invariant factors that differ among countries. We also include time dummies to account for policy trends and external shocks that may have affected the region during the period of analysis. Moreover, given that the errors are not independent from one time period to another, and the serial correlation of errors produce biased estimates, we include education expenditures at time $t-1$ to adjust for error auto-correlation.

Before proceeding with our main results, we address the concern of a potential endogenous relationship between education expenditures and homicide rates. Sceptics may argue that the direction of causality flows from education spending to violent crime because states with larger investment in human capital experience lower homicide rates as education expenditures affect the individual roots of crime. Therefore, we ran several models to test for potential endogeneity between homicide rates and education spending. We performed Granger tests using OLS with PCSE and we ran several Arellano-Bond dynamic panel data models. We failed to find evidence of an endogenous relationship between education spending and homicide rates (see Appendix Table A2).

In Table 1, models 1 and 2 present the primary estimates for testing our hypotheses. Consistent with *H1*, we find a positive significant effect of homicide rates on education expenditures. Within the parameters of model 1, an increase of 20 homicides per 100,000 inhabitants would produce an increase of 0.16 in education spending. This change corresponds to a one standard deviation in homicide rates, which is similar to the increase in homicide rates in Honduras between 1996 and 2001 (from 33 to 53). In terms of education spending, this change corresponds approximately to the difference in mean education spending levels between Argentina (4.36) and Brazil (4.48), or between Chile (3.5) and Colombia (3.69). An increase of two standard deviations in homicide rates would raise education expenditures by 0.30. This is the change in homicide rate experienced by Venezuela from 1987 to 2007 (8 and 48, respectively). Regarding education spending, this change corresponds to the difference in mean spending levels between Colombia (3.6) and Mexico (3.9). The results also show that, compared to other political parties, leftist parties spend more on education.

According to *H2*, the positive effect of homicide rates on education expenditure should be larger when a left-leaning president is in power. In consequence, model 2 incorporates an interaction term between homicide rates and ideology. The coefficient for the interaction term displayed in model 2 is positive and statistically significant at the 0.001 level, indicating that the positive effect of homicide rates on education spending is stronger as the president ideology score increases.¹¹ Figure 1 provides a graphic representation of these results and illustrates the effect of homicide rates at different values of the president ideology variable. It suggests that the effect of homicide rates on education spending is significant

Table 1. Estimates of education expenditures

	(1)	(2)	(3)	(4)
Education _{<i>t-1</i>}	0.5872*** (0.056)	0.5629*** (0.054)	0.5738*** (0.054)	0.5664*** (0.053)
Homicide rates _{<i>t-1</i>}	0.0077** (0.003)	0.0017 (0.003)	0.0077** (0.002)	-0.0007 (0.004)
Ideology score _{<i>t-1</i>}	0.0256* (0.011)	-0.0079 (0.013)		
Log GDP pc _{<i>t-1</i>}	-0.8879 (0.532)	-0.6352 (0.498)	-1.0591* (0.496)	-1.0216* (0.467)
Economic growth _{<i>t-1</i>}	0.0017 (0.010)	-0.0007 (0.010)	0.0012 (0.010)	-0.0008 (0.010)
Trade openness _{<i>t-1</i>}	0.0161** (0.006)	0.0181** (0.006)	0.0154** (0.005)	0.0150** (0.005)
FDI _{<i>t-1</i>}	0.0285** (0.010)	0.0293** (0.010)	0.0272** (0.009)	0.0280** (0.009)
Population aged 0-14 _{<i>t-1</i>}	-0.0035 (0.045)	0.0369 (0.043)	0.0291 (0.045)	0.0230 (0.043)
Aged population _{<i>t-1</i>}	0.0482 (0.167)	-0.1816 (0.176)	0.1401 (0.140)	-0.0574 (0.165)
Democratic legacy _{<i>t-1</i>}	0.1483 (0.110)	0.0805 (0.114)	0.1041 (0.099)	0.0794 (0.102)
Inequality _{<i>t-1</i>}	0.0045 (0.008)	0.0096 (0.008)	0.0059 (0.008)	0.0078 (0.008)
Hom _{<i>t-1</i>} *Ideology score _{<i>t-1</i>}		0.0013*** (0.000)		
Votes for leftist parties _{<i>t-1</i>}			0.0077*** (0.002)	0.0012 (0.003)
Hom _{<i>t-1</i>} *Votes for leftist parties _{<i>t-1</i>}				0.0002** (0.000)
Constant	2.3650 (7.355)	4.2913 (7.614)	4.0536 (6.504)	7.2595 (7.006)
Observations	219	219	231	231
R ²	0.874	0.877	0.869	0.870

Notes: All models include dummies for country and year. PCSE in parentheses. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

for values higher than 4 of the executive's ideology score, and around 63 per cent of the observations fall somewhere along those values. Similarly, Figure 1 shows that as the score of president ideology increases, the effect of homicide rates on education spending becomes stronger. These findings are compatible with research showing that, compared to elite-based democracies, popular democracies in the region privilege social welfare policy and attempt to improve citizens' wellbeing through redistributive policies (Menaldo forthcoming).

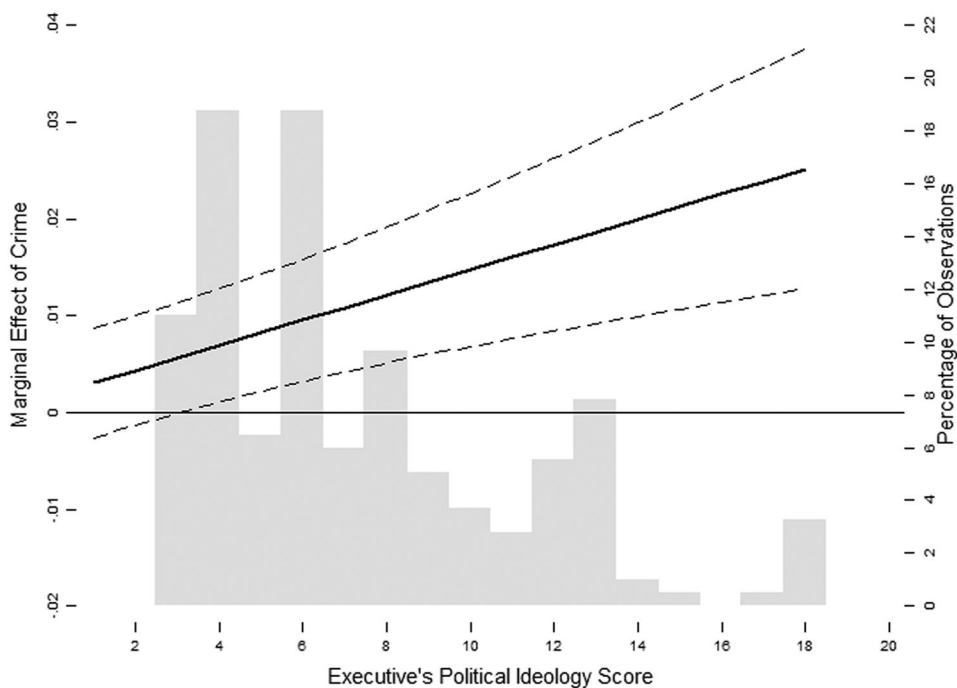


Figure 1. Marginal effect of homicide rates on education spending at different values of executive's ideology score.

In models 3 and 4, we replace the executive's ideological score variable for an indicator capturing the percentage of votes for leftist parties in the lower house of the legislature.¹² These models provide an alternative assessment for *H2* and suggest that the partisan composition of the legislature matters. Specifically, we find that the higher the percentage of votes for left-leaning parties in the lower house of the legislature, the higher the levels of education expenditure. Model 4 adds the interaction term between votes for leftist parties and homicide rates. The interaction term is positive and significant at the 0.01 level. Figure 2 demonstrates that the effect of homicide is significant at values above 30 per cent of votes for leftist parties.

In a preliminary effort to analyse whether increasing criminality influences other categories of social spending beyond education, we assess the effect of homicide rates at time *t-1* on health expenditures. The results show that homicide rates have a larger effect on health spending when a leftist governments is in power, although we fail to find a significant effect for the interaction term when the political ideology score is replaced with the percentage of votes for leftist parties in the lower house (see Appendix Table A3).

Turning to the control variables, the estimates show that trade openness and FDI have a positive effect on education spending. These results are consistent with earlier studies showing a positive association between trade openness and welfare expenditures (Avelino et al. 2005). Apart from GDP per capita, which is significant and negatively associated with education spending in two of the models, none of the other controls reaches statistical significance at conventional levels. These results are consistent with previous research on the subject and lend confidence to our main results.

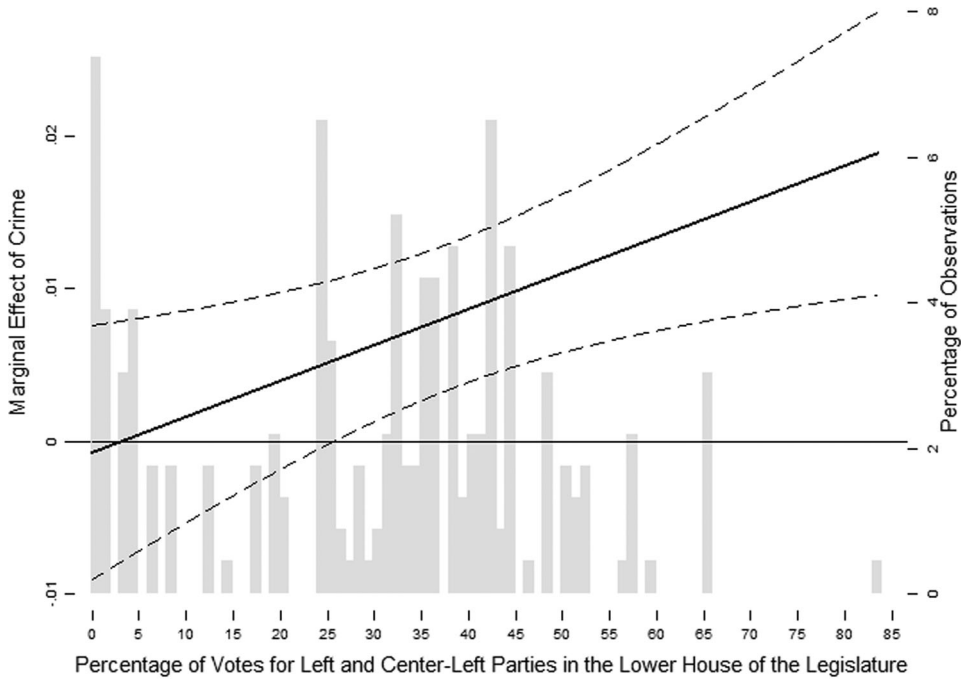


Figure 2. Marginal effect of homicide rates on education spending at different values of the percentage of votes for leftist parties in the lower house of the legislature.

Sensitivity analysis

We estimated alternative models to assess the robustness of our findings.¹³ We include additional controls to ensure that our estimates do not suffer from omitted variable bias: civil war, repression, military spending and unitary systems. We add a binary indicator of civil war, according to the 25 battle-deaths related threshold from Gleditsch et al. (2002). Controlling for the presence of a civil war is important because an internal armed conflict may influence homicide rates (Neumayer 2003) and education spending (Lai & Thyne 2007).

Some may argue that coercive and non-coercive strategies are substitute instruments to fighting crime, and therefore spending on the security sector should reduce education spending. Consequently, we control for repression as a proxy of coercive strategies of an unlawful nature that states use to fight crime (from Cingranelli & Richards 2008). Repressive strategies against crime have been commonplace within the region and thus repression may be correlated with higher investment on law enforcement. If this conjecture is supported, we should observe a negative effect of repression on education spending as governments' allocation of resources to coercive strategies would reduce the available resources for spending on non-coercive strategies. Alternatively, we employ a measure of military spending instead of the indicator of repression. Controlling for military expenditure is perhaps a better way to proxy spending on law enforcement since military actors carry out policing activities in many countries in the region (Brazil, El Salvador, Guatemala, Honduras and Mexico, among others).

We control for the structure of the political system as subnational governments in federal systems tend to have greater independence over anti-crime strategies and welfare spending, and these decisions may collide with policies of national governments.¹⁴ We therefore include a dichotomous variable reflecting whether a country is unitary or federal. Importantly, the Appendix shows that the results do not depend on whether or not the control covariates described above are included.

We replace government ideology data from Baker and Greene (2011) with an ideology measure from Murillo et al. (2010), in which left ideology refers ‘to political actors who seek, as a central programmatic objective, to reduce social and economic inequalities.’ This variable is measured using a scheme that classifies president ideology on a five-point scale, where 1 = left and 5 = right. For our purposes, we recoded this variable into a dummy indicator that takes the value of 1 if a president is from a centre-left or left ideology, and 0 otherwise. Our main results did not significantly change when using Murillo et al.’s indicator, suggesting that our findings do not depend on the manner we measure government ideology.

Finally, we replicate our analysis using non-interpolated homicide rates data. The results remain very similar to those reported in model 2 despite the sample size being decreased to 189 observations (see Figure A4.1 in the online appendix).

Conclusion

In this article we have moved from the traditional focus on governments’ coercive strategies to the study of non-coercive strategies against crime in Latin America. We argued that human capital formation policies represent an important tool to fight crime. We also argued that political ideology affects these choices, and thus expected that leftist governments would make greater efforts towards human capital in response to crime. Our analysis supports these claims, and more generally, illustrates that states implement non-coercive tools to improve citizen security. While recent qualitative studies analysing subnational politics in a handful of cases have been able to tease out anti-crime policies within Latin America (Moncada 2013; Hoelscher & Nussio 2015), this article is the first to examine human capital enhancement efforts in response to violent crime in a cross-national perspective. Our article thus complements existing case studies and provides evidence of a more general pattern in which states invest in human capital to enhance peace.

This article adds to the political economy literature by analysing social policy as an instrument that governments use to respond to societal problems (Zarate-Tenorio 2014). Furthermore, it helps explain how rightist and leftist governments diverge in their approach to public insecurity. Despite a great deal of research examining the so-called ‘left-turn’ in Latin America, thus far we have yet to understand how leftist parties differ from rightist parties in their response to increasing criminality. We contribute to this literature by showing that leftist governments invest in human capital to fight crime more than rightist governments do.

This study has important implications for anti-crime policies. Cross-national research shows that public safety does not purely depend on strengthening judicial system institutions, and states’ efforts to increase educational attainment can help reduce violent

crime (Rivera 2016). This suggests that human capital formation investment may advance public order, as long as education spending effectively increases school attendance. This poses significant challenges as there is evidence that a significant proportion of education spending goes to the bureaucracy. Another important challenge is associated with political cycles. Our findings indicate that human capital enhancement efforts vary depending on governments' ideology. However, ideological changes in the executive are likely to disrupt anti-crime policies and hinder their continuity. This is important because anti-crime policies require time and stability to be effective, and we cannot expect an immediate impact of education policies on crime.

Finally, although we acknowledge that states often use mixed strategies that combine coercive and non-coercive tactics to fight crime, in this article we focused our attention only on non-coercive measures. In future research, it will be particularly important to model coercive and non-coercive instruments as complementary strategies. Instead of considering carrots and sticks as substitute instruments of control, future work on mixed strategies against crime can contribute to a more comprehensive knowledge of how elected governments deal with public insecurity.

Acknowledgements

Previous versions of this article were presented at the 2013 European Conference for Conflict Research (ENCoRe) in Amsterdam, the 2013 MPSA annual meeting in Chicago, the 2015 REPAL annual meeting in Montevideo, and seminars at Essex, Oxford, University of Southern California and CIDE. We are grateful to participants in these meetings, as well as to Nancy Bermeo, Fabián Borges, Vincenzo Bove, Sergio Cárdenas, Han Dorussen, Imke Harbers, Evelyne Huber, María Inclán, Neil Mitchell, Gerry Munck, Aldo Ponce, Brian Phillips, Alex Quiroz, David Rueda, Martin Seeleib-Kaiser, Kristian Skrede Gleditsch, Clayton Thyne and four anonymous reviewers for their useful comments and suggestions. Please note that the authors are listed in alphabetical order. Both authors are equal and primary co-authors.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Table A1. Descriptive statistics

Table A2. Granger causality test and Arellano-Bond dynamic panel data models

Table A3. OLS with PCSE estimates including additional control variables

Figure A3.1 Marginal effects of president ideology

Figure A3.2 Marginal effects of president ideology

Figure A4.1 Marginal effect of homicide rates on education spending at different levels of the political ideology score using non-interpolated data

Notes

1. See www.unodc.org/gsh/en/big-picture.html
2. Related works on Western Europe suggest that increasing criminality and fear of crime benefit populist right parties (Mudde 2012), and that the preferences for redistribution of the rich increase in contexts of high levels of macro-inequality due to fear of crime (Rueda & Stegmueller 2015).
3. See www.hrw.org/americas
4. The argument does not imply that a social-policy-based response to crime serves as a substitute for other coercive strategies, and instead we are more inclined to think that governments combine coercive and non-coercive strategies to tackle crime. We return to this issue later in the empirical analysis.
5. Given the prominence of presidential systems in Latin America, herein we refer interchangeably to 'government', 'executive' and 'presidential' ideology.
6. In Brazil, government social spending increased significantly after the transition to democracy in 1985. In particular, former President Fernando Enrique Cardoso promoted and consolidated welfare policy efforts in Brazil.
7. Education spending data includes public spending in primary, secondary and tertiary education. It also includes national and subnational spending. We use this measure given the lack of disaggregated spending data by education level.
8. Available online at: www.cepal.org/default.asp?idioma=IN
9. Following this procedure, the number of country-year observations increased from 189 to 219. Figure A4.1 in the online appendix shows that the results are not sensitive to the use of non-interpolated homicide data.
10. Inequality data comes from Wilson and Piazza (2013), who used the data from UNDP (2013).
11. It is important to remember that even if the interaction term was not significant, one should always analyse the marginal effects of the variable of interest at different values of the second constitutive term since one cannot draw any conclusions about the interaction effect from the coefficients of the constitutive terms from the regression estimates. As Brambor et al. (2006: 70) put it: '[I]f the covariance term is negative, as is often the case, then it is entirely possible for $\beta_1 + \beta_3Z$ to be significant for substantively relevant values of Z even if all of the model parameters are insignificant.'
12. We added all the percentages of votes going to parties with a score less or equal to ten in the original data from Baker and Green (2011).
13. These results are available in the supplementary appendix.
14. It is important to note, however, that there may be subnational differences in unitary systems (see Moncada 2013).

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