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# INEQUALITY AND CRIME IN LATIN AMERICA AND THE CARIBBEAN

NEW DATA FOR AN OLD QUESTION

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## INEQUALITY AND CRIME IN LATIN AMERICA AND THE CARIBBEAN

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### Abstract

The purpose of this paper is to study the relationship between inequality and crime, with a focus on the Latin America and Caribbean region. We find a significant, positive, and robust association between these variables. The results persist if one instruments for inequality with historical variables in crime regressions, suggesting that a causal interpretation of the estimated effect is reasonable. Moreover, inequality is the only variable showing this robust regularity. Education levels, economic activity, income per capita, and poverty show weaker and unstable relationships with crime. The analysis of the distribution of crime victimization indicates that men and youth suffer more crime than women and the elderly. By socio-economic strata, high-income groups suffer more victimization relative to poorer groups in LAC countries, but the poor suffer more homicides.

JEL: D63, K42, O15, O54.

Keywords: Crime, Inequality, Poverty, Latin America and Caribbean.

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*Background Paper for the UNDP LAC Regional Human Development Report 2021. The views and recommendations presented in this paper are from the authors and do not necessarily represent the official position of UNDP.*

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## 1. Introduction

Inequality and violence are main and persistent features of the Latin America and Caribbean (LAC) region. The resources and policies to address these issues have clearly been insufficient. The roots of these shortcomings probably go back to colonial times. Although inequality and poverty fell in the region during the commodities boom of the 2000s, crime levels are still the world's highest. And, even before the COVID-19 pandemic, growth in the region stagnated again and new tensions rose, driven by the discontent with the slow reductions in inequality.

The purpose of this paper is to study the relationship between income inequality and crime, with a focus on LAC countries. This is not a new topic. Since the seminal work of Ehrlich (1973), several empirical studies have analyzed the relationship between inequality and crime. Most studies show a positive association (e.g. Kelly 2000; Gould, Mustard, and Weinberg 2002; Fajnzylber, Lederman, and Loayza 2002a; Machin and Meghir 2004; Demombynes and Özler 2005; Buonanno and Vargas 2019), but some authors do not find a significant relationship (Bourguignon, Nuñez, and Sanchez Torres 2003; Neumayer 2005; Corvalan and Pazzona 2019). In particular, the papers closest to ours are those of Fajnzylber, Lederman, and Loayza (2002b) and Gaviria and Pagés (2002), whose data were collected more than 20 years ago. We build on this previous work and analyze new data from a recent period. The importance of the topic and the pandemic affecting the region and the world make a fresh study of the relationship between inequality and crime especially timely.

For this research update, we use a cross-country strategy combining macrodata with micro victimization surveys. We find a strong and robust positive relationship between inequality and crime. We use various databases with a panel or cross-sectional structure for different crime measures (homicides or crime victimization surveys) and distinct geographical coverages. We find that greater inequality is associated with a higher incidence of crime. Moreover, in the comparison of LAC countries with the rest of the world, our econometric analysis shows excess crime in the LAC countries relative to the levels of inequality (and other determinants) in the region. Not only is LAC one of the regions with the greatest income inequality in the world, but also its crime levels seem too high relative to the inequality and development levels of the region.

We find that the relationship between inequality and crime appears stronger than the relationship between poverty and crime. Moreover, our empirical results using individual victimization data allow us to address some complementary questions. Men and youth are exposed to more crime than women and the elderly. More educated individuals experience higher crime victimization. In LAC countries, the rich are exposed to more crime than the poor, though this is not the case on other continents. The analysis by type of crime shows that affluent Latin Americans suffer more robberies relative to their poor compatriots, but the poor suffer more homicides. The ethnic victimization differences do not seem strong. Moreover, the analysis of homicide rates by sex shows not only that men suffer more homicides than women, but also that the man-to-woman homicide ratio is higher in more unequal societies, such as the LAC countries.

From the seminal models of Becker (1968) and Ehrlich (1973), the main economic channel linking inequality to crime is that, in unequal societies, the returns to legal opportunities are low relative to the value of booties from illegal activities. Sociologists have also studied the relationship between inequality and crime. One of the leading sociological paradigms on crime, the theory of relative deprivation or strain theory, based on the seminal work of

Merton (1938), states that the dispossessed experience alienation in their comparison with wealthier people. This feeling of disadvantage, lack of opportunities, and unfairness leads them to embrace crime and violence in response to frustration. In the social disorganization theory, inequality, poverty and ethnic heterogeneity are factors that weaken networks of social control, undermining the ability of communities to deter crime (Shaw and McKay 1942; Kornhauser 1978; Kelly 2000). We do not aim to distinguish among different theories. Moreover, these theories are probably complementary rather than competitive. Our focus is to provide an empirical analysis of the relationship between inequality and crime by exploiting renewed cross-country data.

Stealing from the rich may provide more substantial booties. It can also avenge relative deprivation. In any case, both the public and the private sectors respond to crime, and their capacities to react might depend on access to public and private resources. For example, the rich may be able to skew the allocation of police resources in their favour. Moreover, more affluent groups may also protect themselves by hiring private security and acquiring other security measures, which are extremely common in LAC countries, altering the distribution of crime victimization (Di Tella, Galiani, and Scharrotsky 2010; Amodio 2019). In addition, individuals may tailor their consumption decisions to avoid becoming victims of crime (Mejía and Restrepo 2016; Galiani, Jaitman, and Weinschelbaum 2020). Even without distributional biases, police and justice resources respond endogenously to crime levels. Identifying the causal effect of police on crime requires highly specific set-ups (see Levitt 1997; McCrary 2002; Di Tella and Scharrotsky 2004; Klick and Tabarrok 2005; Draca, Machin, and Witt 2011), which are not feasible in cross-country studies. Moreover, uniform data on private security measures are not available, and their consideration would also require a specific identification strategy. Without instruments for these direct endogenous responses to crime, we undertake a reduced form approach. Instead of identifying an unconditional inequality effect, we estimate a relationship between inequality and crime that is already mitigated by these endogenous public and private protection responses (see Corvalan and Pazzona 2019).

Yet, in a reduced form specification, there are two main challenges to a causal interpretation of our estimates of the relationship between inequality and crime. One is that common political and institutional factors, such as weak law enforcement, institutional failures, or a historical culture of exploitation and violence, can simultaneously explain inequality and crime levels. Given that it is extremely difficult to measure and control for the potential presence of omitted variables in a cross-country study, our main strategy is to include fixed effects in our regressions whenever possible as these factors are, by and large, time-invariant.

A second challenge is reverse causality. Crime and violence can reproduce inequality, for example, if criminal organizations and non-state armed groups impede the progress of the most vulnerable population segments, or affect investment, employment, and business activities. Pshisva and Suarez (2010) show that extortionate kidnappings adversely influence corporate investment in Colombia. Robles, Calderón, and Magaloni (2013) find a negative impact of drug violence on economic performance and employment in local Mexican economies. Utar (2018) shows negative effects of the Mexican drug war on firm-level performance in the manufacturing sector. Recent work by Navajas-Ahumada (2020) studies effects on crime avoidance costs and labour market outcomes in the aftermath of homicides near employee workplaces in São Paulo, Brazil. Crime may also impose additional costs on the private sector through extra security expenditures and losses from theft (see Sutton 2017, on Caribbean countries). The local focus of these studies highlights the relative advantage of identifying these effects using microdata. But it may also underline that it could be more difficult for crime to affect inequality at the macro level.

In this paper, we focus on the direction of causality from inequality to crime. The inclusion of country fixed effects and the use of household data from victimization surveys alleviate endogeneity concerns. Following new institutional theories linking current inequality to historical conditions (Engerman and Sokoloff 1997; Acemoglu, Garcia-Jimeno, and Robinson 2012; Soares, Assunção, and Goulart 2012) and the identification strategy of Buonanno and Vargas (2019), we instrument for inequality in two-stage least squares (2SLS) regressions. Our inequality instruments in cross-sectional 2SLS regressions are settler mortality and ex-colony variables (taken from Acemoglu, Johnson, and Robinson 2001) and African and Native slavery measures (taken from Soares, Assunção, and Goulart 2012). The first-stage regressions are very strong, producing instrumented inequality estimates that are extremely similar to the ordinary least squares (OLS) panel estimates. Moreover, the 2SLS results are robust to the inclusion of institutional proxies, which alleviates concerns about the validity of the exclusion restriction. In summary, the 2SLS results suggest that a causal interpretation of the estimated effect of inequality on crime is reasonable.

The rest of the paper is organized as follows. Section II summarizes theoretical predictions on the effect of inequality on crime. Section III describes our data and empirical strategy. Section IV presents our basic set of results. Section V analyzes patterns in the distribution of crime victimization across population groups. Section VI discusses the historical determinants of inequality and presents the 2SLS results. Finally, section VII summarizes our results, and presents the conclusions of the study.

## 2. Theoretical predictions

From the seminal model of Becker (1968), we can write the decision of a risk-neutral rational individual  $j$  of committing or not a crime as follows:

$$(1 - p_j)b_i - p_i f_i b_i > w_j \quad (1)$$

Thus, individual  $j$  becomes involved in criminal activities when the individual's legal income,  $w_j$ , is lower than the individual's expected income from illegal activities, where  $b_i$  is the value of the booty from victim  $i$ , and  $p_i$  and  $f_i$  are the probability of apprehension and the penalty under apprehension, respectively, when attacking victim  $i$ . For simplicity, we write this penalty as interacted with the booty as occurs in several legal systems. The subscript  $i$  on the value of the booty indicates that it can vary across victims.<sup>1</sup>

We can rewrite (1), the condition for committing a crime, as follows:

$$(1 - p_j) - p_i f_i > \frac{w_j}{b_i} = \frac{1}{G_i} \quad (2)$$

Defining inequality,  $G_i$ , as the inverse of the ratio of the legal income,  $w_j$ , to the illegal income,  $b_i$ , we have that a fall in  $w_j$ , the opportunity cost associated with legal opportunities for individual  $j$ , or an increase in  $b_i$ , the booty from (rich) individual  $i$ , make crime more attractive. Thus, the inequality from larger wealth or income differences between the rich and the poor makes crime more likely as the widening differences increase the incentives to offend.<sup>2</sup>

<sup>1</sup> Although not modelled, there could be a destruction of value if only a fraction of the booty is enjoyed by the criminal.

<sup>2</sup> For richer theoretical models on the relationship between inequality and crime, see, for example, Chiu and Madden (1998), İmrohoroğlu, Merlo, and Rupert (2000), and Corvalan and Pazzona (2019).

The main sociological paradigms on crime also predict that inequality increases criminal activity. The strain theory, based on the seminal work of Merton (1938), states that the deprivation that the dispossessed experience relative to the abundance enjoyed by the rich and the feelings of disadvantage, lack of opportunities, and unfairness that arise from this perception lead the dispossessed to crime and violence. For the social disorganization theory (see Shaw and McKay 1942; Kornhauser 1978; Kelly 2000 for a richer discussion), inequality, poverty and ethnic heterogeneity weaken networks of social control, and undermine the ability of communities to deter crime. As mentioned above, we do not aim to distinguish between these different economic and sociological theories. Moreover, these theories are probably complementary rather than competitive. Our focus is the empirical analysis of the relationship between inequality and crime.

The simple model in equation (2) can also capture other forms of inequality. In particular, the probability of apprehension  $p_i$  can vary across victims if some individuals can protect themselves by using security devices or hiring private security services (Di Tella, Galiani, and Scharrotsky 2010; Amodio 2019), or if individuals can alter or hide their consumption decisions to avoid becoming victims of crime (Mejía and Restrepo 2016; Galiani, Jaitman, and Weinschelbaum 2020). Moreover, public protection may be biased towards the more affluent groups in society. In addition, the penalty coefficient,  $f_p$ , can also vary across victims if some of the victims have more resources to prosecute their aggressors.

Under these private and public responses, which are common in LAC countries, the rich may be able to avoid some crime victimization. This avoided crime can be displaced to other social groups or may not occur because the booty from other groups is less attractive. In the second case, total crime will fall, weakening ex post the link between inequality and crime.

But, even without distributional biases, police and justice resources respond endogenously to crime levels. Identifying the causal effect of police on crime requires highly specific set-ups (see Levitt 1997; McCrary 2002; Di Tella and Scharrotsky 2004; Klick and Tabarrok 2005; Draca, Machin, and Witt 2011), which are not feasible in a cross-country study. Moreover, uniform data on private security measures are not available, and their consideration would also require a specific identification strategy. Without separate instruments for these direct endogenous responses to crime, we do not consider a structural crime model, but instead undertake a reduced form approach. Thus, in lieu of identifying an unconditional inequality effect, we estimate a relationship between inequality and crime that is already mitigated by these public and private endogenous protection responses (see Corvalan and Pazzona 2019, for a methodological discussion).

### 3. Data and Empirical Strategy

Data on crime in Latin America is notoriously poor in comparison with the severity and consequences of the problem (Prillaman 2003). The main shortcomings of LAC statistical systems on crime include deficits in periodicity and disaggregation, lack of uniform criteria in data collection and classification across government agencies, lack of independence and transparency, exposure to political intervention, and excess dependence on denounced crime data because of the absence of systematic victimization surveys. As Jaitman (2015, pp. 10–11) summarizes: “the main input for any rigorous empirical analysis is at best scarce, typically of very bad quality, and, at worst, not publicly available or nonexistent.”

As a result, there are no regular, standardized official crime statistics and victimization surveys in LAC for a systematic regional study of crime. The obvious source of crime data for the region should be crimes reported to the police, to the judicial system, or to other administrative offices. A problem with denounced crime data is that international comparability can be difficult under different legal definitions. Moreover, the main concern is that denounced crime is prone to serious underreporting. Low reporting rates probably reflect the weak confidence of the population in the police force and the judiciary, and skepticism about the utility of their denounces. Moreover, reporting can be costly in time, and in monetary and emotional terms. It may also be risky for those who denounce the crimes. Still, if crime underreporting were uniform, denounced crime would be useful for our study. The additional problem is that crime reporting differs sharply across socio-economic groups (Soares 2004a, 2004b), making denounced crime data particularly inappropriate for our purposes. Moreover, crime reporting varies by type of crime and by ethnic, gender, cultural and educational dimensions. In addition, denouncing rates normally decrease as the number of crimes increases (Di Tella, Galiani, and Scharfrodsky 2010).

To circumvent these limitations, we first follow previous authors and use homicide statistics at the country level collected for the Global Burden of Disease Study and by the World Bank.<sup>3</sup> Of course, homicides are a particular and extreme form of crime, but they are of critical concern.<sup>4</sup> In addition, these data have the advantage of international comparability. Using the World Bank data, we build an unbalanced panel of intentional homicides per 100,000 population per year covering 106 countries from 1995 to 2017. Alternatively, we also use the Global Burden of Disease Study data to build an unbalanced panel of homicides per 100,000 population per year covering 123 countries from 1995 to 2017. Appendixes A.1 and A.2 provide the list of country-year observations included in these two unbalanced panels.

The best alternative to administrative data for the measurement of crime are victimization surveys. In these surveys, households chosen randomly are interviewed about crimes that the respondent and other members of the household have suffered. The most common question—standardized by the International Crime Victims Survey—is the following: “Have you or other members of your household been a victim of a crime in the last 12 months?”<sup>5</sup> Crime levels drawn from victimization surveys tend to be much higher than denounced crime statistics, although there may still be significant underreporting, especially for some types of crime (domestic violence and sexual abuse, for example). Moreover, some socio-economic groups, particularly the extreme rich and the extreme poor, are likely underrepresented in surveys because they are typically difficult to reach. In addition, what people recollect as the experience of crime might depend on previous crime exposure or on cultural factors (for example, what are perceived as minor crimes, threats, or a request for a bribe).

<sup>3</sup> See GBD Results Tool (database), Global Burden of Disease Study, Global Health Data Exchange, Institute for Health Metrics and Evaluation, Seattle, <http://ghdx.healthdata.org/gbd-results-tool>; WDI (World Development Indicators) (database), World Bank, Washington, DC, <http://datatopics.worldbank.org/world-development-indicators/>.

<sup>4</sup> As Fajnzylber, Lederman, and Loayza (2002a) point out, homicides are the type of crime that suffers the least from underreporting and idiosyncratic classification, and the incidence of homicide is correlated with other violent crimes.

<sup>5</sup> The International Crime Victims Survey has been carried out in a small number of Latin American countries without any periodicity: Argentina (1992, 1996/1997), Bolivia (1996/1997), Brazil (1992, 1996/1997), Colombia (1996/1997, 2000/2001), Costa Rica (1992, 1996/1997), Panama (2000/2001), and Paraguay (1996/1997). See ICVS (International Crime Victims Survey) (dashboard), United Nations Interregional Crime and Justice Research Institute, Turin, Italy, [http://www.unicri.it/services/library\\_documentation/publications/icvs/](http://www.unicri.it/services/library_documentation/publications/icvs/).

To use a victimization survey with broad international coverage, we first consider the crime questions from the World Values Surveys (WVS).<sup>6</sup> The WVS interviews are (mainly) performed face to face at the respondent's place of residence. The crime victimization question was only included in the survey in one year for each country between 2010 and 2014.<sup>7</sup> Using this data source, we build a cross-sectional database covering 60,472 individuals in 42 countries, although individuals in different countries were interviewed in different years. The questionnaires also include a set of socio-demographic variables that allow us to study some crime victimization patterns. Appendix A.3 provides the list of countries and years included in the WVS crime data.

The WVS database has the advantage of allowing us to compare victimization in LAC countries relative to other regions of the world, at the cost of sacrificing the length of time under study and some rich data details. As a fourth database, we therefore use the Latinobarómetro survey. This yearly survey covered 18 LAC countries from 1995 to 2018 and involved face to face interviews of an average of 14,000 individuals per year. Not all the countries were included every year since 1995.<sup>8</sup> The questionnaires also list city and region of residence and inquire about demographic variables, which allows us to study crime victimization patterns by socio-economic status, age, sex, educational attainment, and ethnicity. Moreover, additional questions were included in some years, such as questions on the type of crime suffered and general concerns about crime. Appendix A.4 details the list of country-year observations included in the Latinobarómetro data.

Figure 1 presents, for the country-year observations in our samples, the country averages of homicide data (World Bank) and WVS and Latinobarómetro victimization data for the LAC countries, and the overall homicide and WVS averages for the rest of the world. Some interesting facts may be observed. The first is that the incidence of crime is substantial in LAC countries. All the countries in the region are above the rest-of-the-world average in homicides and victimization rates (except Chile for homicides). Second, the Latinobarómetro and WVS surveys provide similar results (although Latinobarómetro covers a much longer period). Third, homicides and victimization rates show low correlation. In particular, some high-homicide countries, such as El Salvador, Honduras, Colombia, Guatemala, Brazil, and Dominican Republic, show survey victimization rates that are close to those of low-homicide countries, such as Chile, Argentina, Uruguay, Peru, Bolivia, and Costa Rica. This low correlation means that we will be performing our econometric exercises on databases that provide quite different information. Moreover, the low correlation may imply that what people recollect as a suffered crime might depend on previous crime exposure, or on cultural factors.<sup>9</sup> It may also result from the relatively low levels of drug trafficking and gun ownership in some Southern Cone countries, which may explain the low number of homicides, although the levels of common crime in these countries are not different from the rest of the region. In any case, the incorporation of country fixed effects in our regressions helps control for these potential country differences.

<sup>6</sup> See WVS (World Values Survey) (Online Analysis), King's College, Old Aberdeen, United Kingdom, <http://www.worldvaluessurvey.org/WVSONline.jsp>, and Inglehart *et al.* (2014).

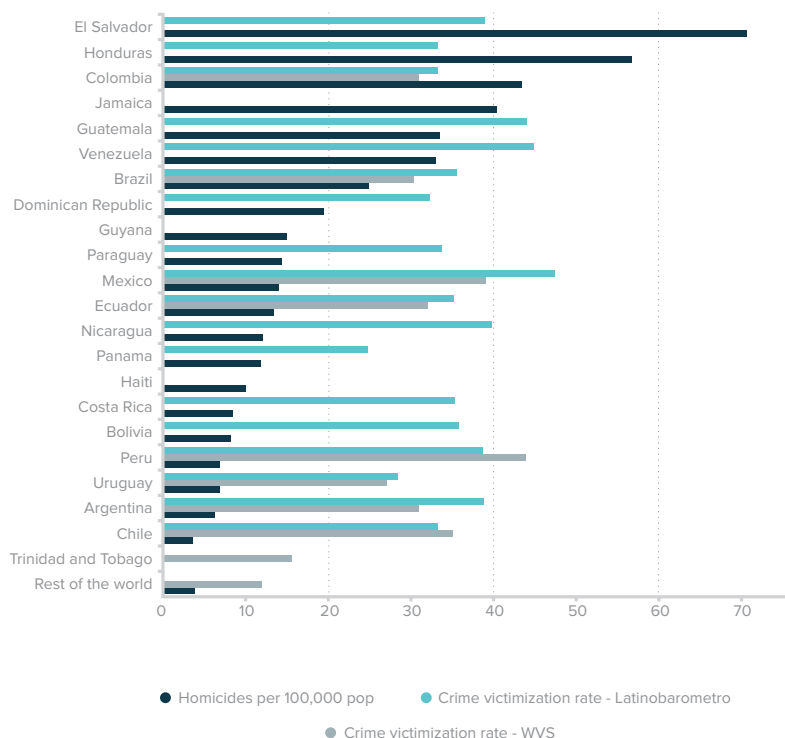
<sup>7</sup> See WVS (World Values Survey), Wave 6 (2010–2014) (dashboard), King's College, Old Aberdeen, United Kingdom, <http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp>.

<sup>8</sup> The Latinobarómetro survey was not performed in 1999, 2012 and 2014. The crime victimization questions were different for 2000, making the answers for that year not comparable. See Latinobarómetro (dashboard), Corporación Latinobarómetro, Santiago, Chile, <http://www.latinobarometro.org/lat.jsp>.

<sup>9</sup> On habituation and desensitization to crime, see Di Tella *et al.* (2019).



Figure 1. Homicides and Victimization, Latin American and Caribbean Countries



Source: Authors' calculations based on data from the World Bank, the World Values Survey (WVS), and Latinobarómetro Survey.

Note: The horizontal dark blue bar represents the country average of intentional homicides per 100,000 population calculated for the available country-year observations from 1995 to 2017 (source: World Bank). The grey bar represents the country crime victimization rate (the percentage of interviewed households in the country that indicate that at least one of its members has been the victim of a crime during the last 12 months) for the year (from 2010 to 2014) in which the survey was performed in the country (source: WVS). The turquoise bar represents the country average of the crime victimization rate (the percentage of interviewed households in the country that indicate that at least one of their members has been the victim of a crime during the last 12 months) for the available LAC country-year observations in 1995–2018 (source: Latinobarómetro).

We complement these crime data sources with inequality and other control variables. For inequality, we use country Gini indexes obtained from the PovcalNet database of the World Bank.<sup>10</sup> We also use Gini indexes produced by the Centre for Distributive, Labour, and Social Studies (CEDLAS) for the subnational level in LAC countries.<sup>11</sup>

To control for economic activity and proxy indirectly for unemployment, we use data on variation of gross domestic product (GDP) per capita in constant prices that are compiled by the International Monetary Fund.<sup>12</sup> In some specifications, we also use GDP per capita (and its log). For poverty, we use three alternative measures: the extreme poverty ratio and the poverty ratio, respectively at \$1.90 a day and at \$3.20, from the World Development Indicators

<sup>10</sup> See PovcalNet: Data (database), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx>.

<sup>11</sup> See CEDLAS (Centre for Distributive, Labour, and Social Studies) (dashboard), CEDLAS, Facultad de Ciencias Económicas, Universidad Nacional de La Plata, La Plata, Argentina, <http://www.cedlas.econo.unlp.edu.ar/>.

<sup>12</sup> See IMF Data: Access to Macroeconomic and Financial Data (dashboard), International Monetary Fund, Washington, DC, <https://data.imf.org/>.

database, and the poverty gap from World Bank PovcalNet database.<sup>13</sup> For LAC countries, we also use poverty measures at the subnational level provided by CEDLAS. We use the primary completion rate from the World Development Indicators database to control for educational attainment.<sup>14</sup> For the poverty and education controls, if data are missing on a given country in some year, we extrapolate the variable using information on that country for the closest year (the GDP data are never missing).

For our 2SLS regressions, we follow the recent literature on the historical roots of the current characteristics of a society to instrument for inequality. Our inequality instruments are settler mortality and ex-colony variables compiled by Acemoglu, Johnson, and Robinson (2001) and African and Native slavery measures provided by Soares, Assunção, and Goulart (2012).

Using these various databases, we run panel regressions at the country level of the following form:

$$Crime_{it} = \alpha Inequality_{it} + b X_{it} + \mu_t + \delta_i + \varepsilon_{it}, \quad (3)$$

where  $Crime_{it}$ ,  $Inequality_{it}$ , and the controls  $X_{it}$  (economic activity, poverty, and education) are measured for country  $i$  and year  $t$ ;  $\mu_t$  are year fixed effects to control for common shocks;  $\delta_i$  are region fixed effects to control for time-invariant characteristics, and  $\varepsilon_{it}$  is the error term. In some specifications, the standard errors are clustered at the country level to allow for geographical and serial correlation.<sup>15</sup>

Similarly, we run panel regressions at the household or individual level of the form:

$$Crime_{ijt} = \alpha Inequality_{it} + b X_{it} + c H_j + \mu_t + \delta_i + \varepsilon_{ijt}, \quad (4)$$

where  $Crime_{ijt}$  indicates crimes suffered by household or individual  $j$  in country  $i$  and year  $t$ ;  $Inequality_{it}$  and the controls  $X_{it}$  (economic activity, poverty, and education) are measured for country  $i$  and year  $t$ ; the controls  $H_j$  indicate characteristics (socio-economic level, sex, age, ethnicity, educational attainment) of household or individual  $j$ ;  $\mu_t$  are year fixed effects to control for common shocks;  $\delta_i$  are country fixed effects to control for time-invariant characteristics, and  $\varepsilon_{ijt}$  is the error term. In some specifications,  $Inequality_{kt}$  is defined at the subnational level  $k$ . And, again, in some specifications, the standard errors are clustered at the national, subnational, or city level to allow for geographical and serial correlation.

Finally, we run 2SLS cross-sectional regressions at the country level of the form:

$$Crime_i = \alpha Inequality_i + \varepsilon_i, \quad (5)$$

where  $Crime_i$  and  $Inequality_i$  are the averages of these variables for all the observations in our sample for country  $i$ , and  $\varepsilon_i$  is the error term.  $Inequality_i$  is instrumented by historical country characteristics  $Z_i$  (settler mortality, ex-colony, African slavery, and Native slavery measures). The 2SLS regressions are cross-sectional and are run on country averages, as the instruments do not vary over time.

<sup>13</sup> See WDI (World Development Indicators) (database), World Bank, Washington, DC, <http://datatopics.worldbank.org/world-development-indicators/>.

<sup>14</sup> The primary completion rate is the total number of new entrants (enrolled, minus repeaters) in the last grade of primary education, regardless of age, expressed as a percentage of the population at the theoretical entrance age to the last grade of primary education.

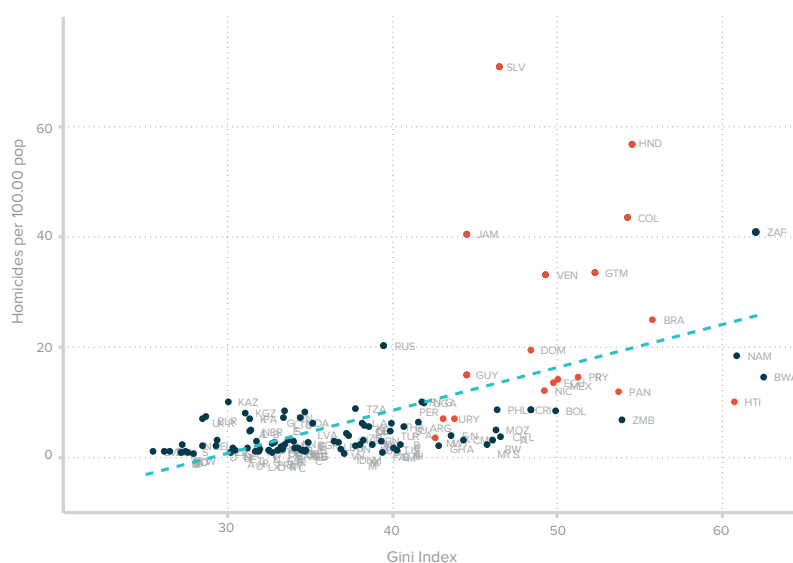
<sup>15</sup> Although there may be international spillovers, an advantage of cross-country data is that displacement effects and other externalities of crime shocks are largely internalized at the country level.

## 4. The Robust Relationship between Inequality and Crime

The purpose of this study is to investigate the relationship between inequality and crime in LAC. As discussed in the introduction, this is not a new topic, but its importance means it is worth analyzing new data from a recent period. The main previous studies on this issue for the world and LAC countries are Fajnzylber, Lederman, and Loayza (2002a) and Gaviria and Pagés (2002), respectively. We cover the period 1995 through 2017 or 2018, roughly the two decades subsequent to the periods considered in those seminal studies.

We first consider the relationship between inequality and homicides. Figure 2 presents the country average Gini indexes and homicide rates (using the available observations for each country in 1995–2017). A graphical inspection of this figure suggests three main features. First, there is a positive (unconditional) relationship between inequality and homicides. Second, the LAC countries tend to be located in the upper-right area of the graph, exhibiting both high inequality and high crime relative to the rest of the world. Third, not only do LAC countries show high crime and high inequality, but their levels of crime are also too high according to what one might expect based on their levels of inequality. LAC countries are usually outliers in crime regressions (see also Soares and Naritomi 2010; Jaitman 2015).

**Figure 2.** Homicides and Inequality, World, 1995–2017

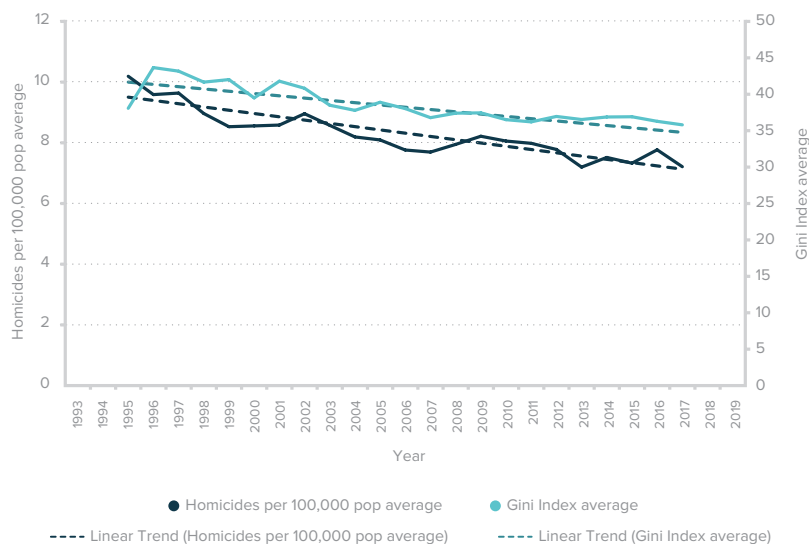


Source: Authors' calculations based on data of the World Bank.

Note: The vertical axis represents the country average of intentional homicides per 100,000 population, and the horizontal axis represents the country average Gini index. In both cases, the averages are calculated for each country using the available year observations from 1995 to 2017. The total number of countries is 106: 21 countries in Latin America and the Caribbean, 21 countries in Africa, 2 countries in North America, 24 countries in Asia, 16 countries in Western Europe, 21 countries in Eastern Europe and 1 country in Oceania. LAC countries are indicated by red points.

Figure 3 adds a time dimension. It shows the average declining trends in both inequality and crime in our world sample during the period of analysis, with somewhat smoother changes in inequality than in homicides. Appendix Figure A.1 shows similar trends in population-weighted averages.

Figure 3. Homicides and Inequality, World, 1995–2017



Source: Authors' calculations based on data of the World Bank.

Note: The average of intentional homicides per 100,000 population is shown on the left vertical axis, and the average of the Gini index is shown on the right vertical axis. Averages are calculated using all the countries available for each year. Linear trends are indicated by dotted lines.

The relationship between crime and inequality is estimated in Table 1. The odd columns present robust standard errors, and the even columns present standard errors clustered at the country level to allow for potential serial correlation. After the first two columns, we introduce as control variables the GDP variation (to control for economic activity and, thus, unemployment), the primary completion rate, and a variety of poverty measures. We prefer not to incorporate variables directly endogenous to crime, such as the number of police officers or other public protection variables, to avoid strong sources of endogeneity (Levitt 1997; McCrary 2002; Di Tella and Schargrodsky 2004). For a similar reason, we would not include private security measures even if they were available. Our regressions should be interpreted as reduced-form regressions that already include public and private responses to crime. Year dummies are included for the whole table.

The first two columns show a strong, positive and significant relationship between inequality and crime. The estimates are not affected by the introduction of controls. In particular, the inequality coefficient in columns 3 and 4 implies that an increase in the Gini index of 10 points (our Gini index is defined from 0 to 100) is associated with 9.3 additional homicides per 100,000 population. The coefficients on the control variables show that crime decreases with economic activity and with education levels. However, the coefficient on the poverty measure—the poverty headcount ratio at \$1.90 a day—does not show the expected sign. In column 4, when we consider clustered standard errors instead of robust standard errors, the significance of the control variables falls below standard levels, but inequality remains highly significant.

In columns 5 and 6, we introduce regional dummies by continent aiming to control for time-invariant characteristics. We cannot include country dummies because this panel is very unbalanced, and there are only one or two observations for some countries. As expected, the coefficient on Latin America and the Caribbean is positive and significant. This indicates that, relative to the Western European countries (omitted category), LAC countries have 14.34

extra homicides per year per 100,000 population. Moreover, the LAC coefficient is the largest of the regional coefficients, highlighting the size of the crime problem in Latin America and the Caribbean. Because the average homicide rate in the LAC countries in our sample is 21.53, the regional coefficient suggests that the “additional” crimes in Latin American and the Caribbean represent two thirds of the total homicides.<sup>16</sup> If, in the LAC countries, we replace the continental dummy with individual country dummies, the countries with the highest coefficients are the same ones that showed the largest levels in Figure 1 and the excess homicides in Figure 2: El Salvador, Honduras, Colombia, Jamaica, Venezuela, Guatemala, and Brazil. The coefficient on inequality falls once the regional dummies are included, but remains highly significant. This implies that an increase in the Gini of 10 points is associated with 4.1 additional homicides per 100,000 population. The coefficient on poverty now turns to the expected positive sign (higher crime is associated with higher poverty). As before, the coefficient on inequality remains significant at standard levels, but the coefficients on the control variables turn insignificant once the standard errors are clustered in column 6.

In columns 7 through 10, we alternatively use the poverty gap and the poverty headcount ratio at \$3.20 a day. Higher poverty levels are associated with higher crime, but the coefficients are not significant if the standard errors are clustered. The Gini coefficients show little change.

In columns 11 through 14, we also include controls for GDP per capita and its log. The coefficients show the expected negative sign (crime falls with average country income). If we control for per capita income, the LAC region coefficient falls to around 10, but it is still the highest of the region coefficients.

The size and significance of the inequality coefficient remain robust throughout these different specifications. Instead, poverty seems to show a weaker and less robust relationship with crime. Moreover, the estimated coefficients are in a similar range to those previously presented by Fajnzylber, Lederman, and Loayza (2002a, 2002b), the cross-country estimations most comparable to ours in the previous literature.<sup>17</sup>

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<sup>16</sup> The population-weighted LAC homicide rate is 21.33, almost the same as the simple average.

<sup>17</sup> The estimated coefficients of the Gini index on the log of homicide rates range between 0.0146 and 0.0813 in Fajnzylber, Lederman, and Loayza (2002b), and between 0.023 and 0.067 in Fajnzylber, Lederman, and Loayza (2002a). In a log specification, our estimates in Table 1 vary between 0.0385 and 0.0944.

Table 1. Homicides and Inequality, world, 1995–2017

| Variables                       | Homicides             |                       |                        |                       |                        |                       |                        |                       |                        |                      |                        |                       |                        |                        |
|---------------------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|----------------------|------------------------|-----------------------|------------------------|------------------------|
|                                 | (1)                   | (2)                   | (3)                    | (4)                   | (5)                    | (6)                   | (7)                    | (8)                   | (9)                    | (10)                 | (11)                   | (12)                  | (13)                   | (14)                   |
| Gini index                      | 0.9181***<br>(0.0550) | 0.9181***<br>(0.1972) | 0.9312***<br>(0.0540)  | 0.9312***<br>(0.1959) | 0.4114***<br>(0.0839)  | 0.4114*<br>(0.2366)   | 0.4028***<br>(0.0830)  | 0.4028*<br>(0.2390)   | 0.3954***<br>(0.0846)  | 0.3954*<br>(0.2366)  | 0.4090***<br>(0.0840)  | 0.4090*<br>(0.2359)   | 0.4550***<br>(0.0817)  | 0.4550**<br>(0.2263)   |
| GDP variation                   |                       |                       | -17.7703**<br>(7.5805) | -17.7703<br>(12.7970) | -14.2327*<br>(7.4471)  | -14.2327<br>(8.7910)  | -14.1488*<br>(7.4060)  | -14.1488<br>(8.7418)  | -14.8448**<br>(7.4770) | -14.8448<br>(9.0570) | -16.3083**<br>(7.5903) | -16.3083*<br>(9.2429) | -19.5478**<br>(7.9150) | -19.5478*<br>(10.3159) |
| Primary completion rate         |                       |                       | -0.1086**<br>(0.0436)  | -0.1086<br>(0.0954)   | -0.1118**<br>(0.0439)  | -0.1118<br>(0.0973)   | -0.1109**<br>(0.0431)  | -0.1109<br>(0.0991)   | -0.0931**<br>(0.0442)  | -0.0931<br>(0.0963)  | -0.1162***<br>(0.0441) | -0.1162<br>(0.0991)   | -0.0758*<br>(0.0429)   | -0.0758<br>(0.0822)    |
| Poverty ratio at \$1.90 a day   |                       |                       | -0.0800***<br>(0.0299) | -0.0800<br>(0.0651)   | 0.0682**<br>(0.0334)   | 0.0682<br>(0.0869)    |                        |                       |                        |                      | 0.0390<br>(0.0321)     | 0.0390<br>(0.0779)    | -0.0694*<br>(0.0364)   | -0.0694<br>(0.0793)    |
| Poverty gap                     |                       |                       |                        |                       |                        |                       | 0.1792<br>(0.1113)     | 0.1792<br>(0.2232)    |                        |                      |                        |                       |                        |                        |
| Poverty ratio at \$3.20 a day   |                       |                       |                        |                       |                        |                       |                        |                       | 0.0794***<br>(0.0203)  | 0.0794<br>(0.0594)   |                        |                       |                        |                        |
| GDP per capita                  |                       |                       |                        |                       |                        |                       |                        |                       |                        |                      | -0.0001***<br>(0.0000) | -0.0001<br>(0.0001)   |                        |                        |
| Log (GDP per capita)            |                       |                       |                        |                       |                        |                       |                        |                       |                        |                      |                        |                       | -3.7821***<br>(0.7837) | -3.7821<br>(2.4472)    |
| Eastern Europe                  |                       |                       |                        |                       | 2.8808***<br>(0.4077)  | 2.8808***<br>(1.0839) | 2.9674***<br>(0.4016)  | 2.9674***<br>(1.0604) | 2.5501***<br>(0.4130)  | 2.5501**<br>(1.1216) | -0.0197<br>(0.6562)    | -0.0197<br>(2.0597)   | -0.7987<br>(0.7633)    | -0.7987<br>(2.4239)    |
| Latin America and the Caribbean |                       |                       |                        |                       | 14.3451***<br>(2.2160) | 14.3451*<br>(7.8525)  | 14.4574***<br>(2.2176) | 14.4574*<br>(7.8811)  | 13.9838***<br>(2.1972) | 13.9838*<br>(7.7552) | 10.9337***<br>(1.9636) | 10.9337<br>(6.8460)   | 9.1880***<br>(1.9164)  | 9.1880<br>(6.3836)     |
| North America                   |                       |                       |                        |                       | 0.5299<br>(0.8768)     | 0.5299<br>(1.6918)    | 0.5618<br>(0.8745)     | 0.5618<br>(1.7064)    | 0.6389<br>(0.8743)     | 0.6389<br>(1.6957)   | 0.5199<br>(0.8934)     | 0.5199<br>(1.8288)    | 0.3910<br>(0.8777)     | 0.3910<br>(1.7051)     |
| Africa                          |                       |                       |                        |                       | -2.3638<br>(2.3173)    | -2.3638<br>(6.1520)   | -2.2034<br>(2.4588)    | -2.2034<br>(5.9101)   | -3.7778<br>(2.2966)    | -3.7778<br>(6.1444)  | -5.7227**<br>(2.5153)  | -5.7227<br>(7.2828)   | -6.8960**<br>(2.7528)  | -6.8960<br>(7.8327)    |
| Asia                            |                       |                       |                        |                       | 0.4275<br>(0.7582)     | 0.4275<br>(2.1226)    | 0.7193<br>(0.7325)     | 0.7193<br>(1.9787)    | -0.9385<br>(0.8468)    | -0.9385<br>(2.4804)  | -3.0379***<br>(0.9986) | -3.0379<br>(3.2834)   | -4.8305***<br>(1.2771) | -4.8305<br>(4.1934)    |
| Oceania                         |                       |                       |                        |                       | 0.3161<br>(2.5083)     | 0.3161<br>(5.8064)    | 0.3540<br>(2.7367)     | 0.3540<br>(5.5983)    | -1.6206<br>(2.4671)    | -1.6206<br>(5.9301)  | -3.0392<br>(2.5994)    | -3.0392<br>(6.9626)   | -3.7567<br>(2.6952)    | -3.7567<br>(7.1950)    |
| Observations                    | 1,124                 | 1,124                 | 1,124                  | 1,124                 | 1,124                  | 1,124                 | 1,124                  | 1,124                 | 1,124                  | 1,124                | 1,124                  | 1,124                 | 1,124                  | 1,124                  |
| R-squared                       | 0.3409                | 0.3409                | 0.3480                 | 0.3480                | 0.4120                 | 0.4120                | 0.4122                 | 0.4122                | 0.4152                 | 0.4152               | 0.4163                 | 0.4163                | 0.4242                 | 0.4242                 |
| Year dummies                    | YES                   | YES                   | YES                    | YES                   | YES                    | YES                   | YES                    | YES                   | YES                    | YES                  | YES                    | YES                   | YES                    | YES                    |
| Standard errors                 | Robust                | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster      | Robust                 | Country cluster       | Robust                 | Country cluster        |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the rate of intentional homicides per 100,000 population (source: World Bank). **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled, minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa, Asia, and Oceania** are continental dummies (Western Europe is excluded). 106 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1

In Table 2, we consider an alternative database on homicides, produced by the Global Burden of Disease Study. All the homicide results, including the size and significance of the inequality coefficient, are similar using this somewhat larger database.

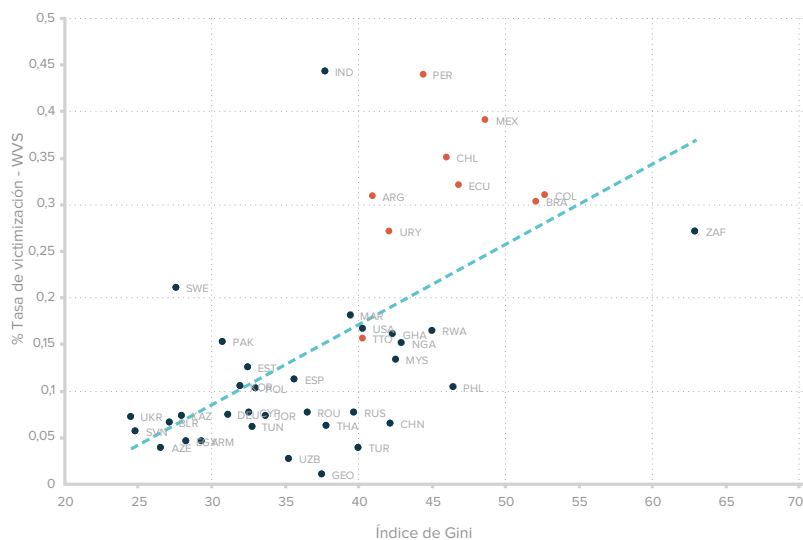
**Table 2.** Homicides and Inequality, World, 1995–2017

| Variables                       | Homicides             |                       |                        |                       |                        |                       |                        |                       |                        |                       |                        |                      |                         |                        |
|---------------------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|----------------------|-------------------------|------------------------|
|                                 | (1)                   | (2)                   | (3)                    | (4)                   | (5)                    | (6)                   | (7)                    | (8)                   | (9)                    | (10)                  | (11)                   | (12)                 | (13)                    | (14)                   |
| Gini index                      | 0.7968***<br>(0.0487) | 0.7968***<br>(0.1804) | 0.8508***<br>(0.0497)  | 0.8508***<br>(0.1877) | 0.4722***<br>(0.0864)  | 0.4722*<br>(0.2521)   | 0.4907***<br>(0.0878)  | 0.4907*<br>(0.2594)   | 0.4479***<br>(0.0863)  | 0.4479*<br>(0.2509)   | 0.4711***<br>(0.0865)  | 0.4711*<br>(0.2515)  | 0.5039***<br>(0.0845)   | 0.5039**<br>(0.2454)   |
| GDP variation                   |                       |                       | -7.7042<br>(7.4200)    | -7.7042<br>(12.4242)  | -10.7937<br>(7.2107)   | -10.7937<br>(8.8751)  | -10.7129<br>(7.1963)   | -10.7129<br>(8.7801)  | -11.3049<br>(7.1967)   | -11.3049<br>(9.1599)  | -12.8847*<br>(7.1982)  | -12.8847<br>(9.1823) | -16.0684***<br>(7.3889) | -16.0684<br>(10.3033)  |
| Primary completion rate         |                       |                       | -0.0255<br>(0.0244)    | -0.0255<br>(0.0650)   | -0.0643**<br>(0.0286)  | -0.0643<br>(0.0845)   | -0.0768***<br>(0.0296) | -0.0768<br>(0.0909)   | -0.0411<br>(0.0285)    | -0.0411<br>(0.0827)   | -0.0682**<br>(0.0289)  | -0.0682<br>(0.0856)  | -0.0299<br>(0.0280)     | -0.0299<br>(0.0775)    |
| Poverty ratio at \$1.90 a day   |                       |                       | -0.1185***<br>(0.0200) | -0.1185**<br>(0.0506) | 0.0112<br>(0.0229)     | 0.0112<br>(0.0645)    |                        |                       |                        |                       |                        | -0.0154<br>(0.0213)  | -0.0154<br>(0.0561)     | -0.1071***<br>(0.0264) |
| Poverty gap                     |                       |                       |                        |                       |                        |                       | -0.0504<br>(0.0552)    | -0.0504<br>(0.1312)   |                        |                       |                        |                      |                         |                        |
| Poverty ratio at \$3.20 a day   |                       |                       |                        |                       |                        |                       |                        |                       | 0.0555***<br>(0.0187)  | 0.0555<br>(0.0592)    |                        |                      |                         |                        |
| GDP per capita                  |                       |                       |                        |                       |                        |                       |                        |                       |                        |                       | -0.0001***<br>(0.0000) | -0.0001<br>(0.0001)  |                         |                        |
| Log (GDP per capita)            |                       |                       |                        |                       |                        |                       |                        |                       |                        |                       |                        |                      | -3.7049***<br>(0.8192)  | -3.7049<br>(2.7825)    |
| Eastern Europe                  |                       |                       |                        |                       | 5.1452***<br>(0.4201)  | 5.1452***<br>(1.4121) | 5.1604***<br>(0.4176)  | 5.1604***<br>(1.3944) | 4.8575***<br>(0.4294)  | 4.8575***<br>(1.4630) | 1.7700**<br>(0.7454)   | 1.7700<br>(2.6811)   | 1.4678*<br>(0.8335)     | 1.4678<br>(2.9113)     |
| Latin America and the Caribbean |                       |                       |                        |                       | 12.0901***<br>(2.1828) | 12.0901<br>(7.5254)   | 11.9299***<br>(2.2063) | 11.9299<br>(7.6134)   | 11.8562***<br>(2.1429) | 11.8562<br>(7.4037)   | 8.1224***<br>(1.8578)  | 8.1224<br>(6.5528)   | 7.1648***<br>(1.7854)   | 7.1648<br>(6.1889)     |
| North America                   |                       |                       |                        |                       | 0.7203<br>(0.9003)     | 0.7203<br>(1.7333)    | 0.6011<br>(0.8981)     | 0.6011<br>(1.7658)    | 0.8934<br>(0.9092)     | 0.8934<br>(1.7422)    | 0.7111<br>(0.9332)     | 0.7111<br>(1.9831)   | 0.6935<br>(0.9297)      | 0.6935<br>(1.8404)     |
| Africa                          |                       |                       |                        |                       | -2.4298<br>(1.6815)    | -2.4298<br>(5.4478)   | -1.7990<br>(1.6048)    | -1.7990<br>(4.9433)   | -4.3467**<br>(1.7932)  | -4.3467<br>(5.9468)   | -6.5210***<br>(2.0010) | -6.5210<br>(6.9740)  | -7.0928***<br>(2.1289)  | -7.0928<br>(7.3428)    |
| Asia                            |                       |                       |                        |                       | 1.1510<br>(0.7013)     | 1.1510<br>(2.2989)    | 1.2122*<br>(0.6983)    | 1.2122<br>(2.2503)    | 0.0464<br>(0.7945)     | 0.0464<br>(2.7369)    | -2.7707***<br>(1.0274) | -2.7707<br>(3.8491)  | -3.6163***<br>(1.2002)  | -3.6163<br>(4.4388)    |
| Oceania                         |                       |                       |                        |                       | 1.2014<br>(3.2952)     | 1.2014<br>(5.4901)    | 1.8354<br>(3.2871)     | 1.8354<br>(5.0086)    | -0.7485<br>(3.1404)    | -0.7485<br>(5.9901)   | -2.7087<br>(3.2565)    | -2.7087<br>(6.7563)  | -2.0526<br>(2.7393)     | -2.0526<br>(6.4613)    |
| Observations                    | 1,297                 | 1,297                 | 1,297                  | 1,297                 | 1,297                  | 1,297                 | 1,297                  | 1,297                 | 1,297                  | 1,297                 | 1,297                  | 1,297                | 1,297                   | 1,297                  |
| R-squared                       | 0.2726                | 0.2726                | 0.2844                 | 0.2844                | 0.3446                 | 0.3446                | 0.3448                 | 0.3448                | 0.3472                 | 0.3472                | 0.3501                 | 0.3501               | 0.3566                  | 0.3566                 |
| Year dummies                    | YES                   | YES                   | YES                    | YES                   | YES                    | YES                   | YES                    | YES                   | YES                    | YES                   | YES                    | YES                  | YES                     | YES                    |
| Standard errors                 | Robust                | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster      | Robust                  | Country cluster        |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the rate of **Homicides** per 100,000 population (source: Global Burden of Disease Study). **Gini index** is defined from 0 to 100 (source: World Bank). GDP variation per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa, Asia, and Oceania** are continental dummies (Western Europe is excluded). 123 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

We now turn to different crime variables: the results of crime victimization surveys. Figure 4 presents the relationship between inequality and crime victimization rates from the World Values Surveys. As explained above, the crime victimization question was included in the WVS only in one year for each country between 2010 and 2014. Similarly to Figure 2, Figure 4 suggests, first, that there is a positive (unconditional) relationship between inequality and crime; second, that LAC countries tend to show both high inequality and high crime relative to the rest of the world; and, third, that their crime levels are too high, even in the face of their high inequality levels.

Figure 4. Crime Victimization Rate and Inequality, World, 2010–2014



Source: Authors’ calculations based on data from the World Values Survey (victimization rates) and the World Bank (Gini indexes).

Note: The vertical axis represents the country crime victimization rate and the horizontal axis represents the Gini index. For each country, the crime victimization rate is the percentage of families that indicated that at least one of its members had been the victim of a crime during the last twelve months. The crime victimization question was included in the World Values Surveys between 2010 and 2014, but only in one year for each country. For each country, the Gini index corresponds to the year the victimization rate is available, or the closest available year. The total number of countries is 42: 9 countries in Latin America and the Caribbean, 7 countries in Africa, 1 country in North America, 12 countries in Asia, 3 countries in Western Europe, and 10 countries in Eastern Europe. LAC countries are indicated by red points.

We use the WVS data in Table 3. Each observation corresponds to an interviewed household. For each specification, we alternatively present robust and clustered (at a regional, subnational level) standard errors to allow for the potential correlation of shocks within a certain geographical area.<sup>18</sup> The first two columns, without control variables, show a significant and positive coefficient for inequality. The inequality coefficient and its significance do not change in columns 3 and 4 when controls are included. The GDP variation has the expected sign, but poverty and education do not. As before, we include dummies per continent in columns 5 and 6. As happened with homicides, the LAC region shows the highest positive coefficient (the excluded region is Western Europe). Because the average WVS victimization rate for the LAC countries is 33.64 percent, the 11.81 percent regional coefficient indicates that the unexplained “additional” crime in LAC represents about a third of the region’s total crime victimization.<sup>19</sup> Once the continental dummies are included, the coefficient on inequality falls, but remains positive and highly significant. The estimated coefficient relates a Gini increase of 10 points to an increase in the victimization rate of 3.7 percentage points, that is, an increase of about 24 percent of the baseline level.<sup>20</sup> The education and poverty coefficients turn to the expected signs, but their significance is not robust.

<sup>18</sup> All the results are similar considering standard errors clustered at the country level. They are also unaltered using WVS sampling weights in weighted regressions.  
<sup>19</sup> For the LAC countries in the WVS survey, the population-weighted average victimization rate is 33.67 percent, almost the same as the simple average.  
<sup>20</sup> The simple average of the WVS country victimization rates in the sample is 15.38 percent. The population-weighted average is 21.19 percent as larger countries show higher victimization rates.



As before, we introduce alternative poverty measures (the poverty gap in columns 7 and 8, and the poverty headcount ratio at \$3.20 a day in columns 9 and 10). The signs of the poverty coefficients are unstable. We control for GDP per capita in columns 11 and 12, and its log in columns 13 and 14. In both cases, GDP per capita has the expected negative sign, but it is never statistically significant. The relationship that always appears positive and statistically significant in all these specifications is the one between inequality and crime. The size of this coefficient is also stable (once the continental dummies are included).

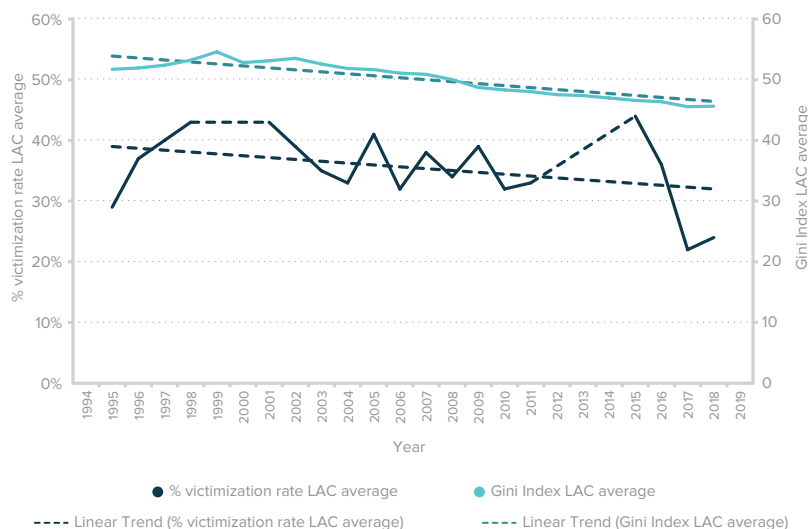
**Table 3.** Crime Victimization and Inequality, World, 2010–2014

| Variables                       | Crime victimization   |                       |                        |                       |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                 | (1)                   | (2)                   | (3)                    | (4)                   | (5)                    | (6)                    | (7)                    | (8)                    | (9)                    | (10)                   | (11)                   | (12)                   | (13)                   | (14)                   |
| Gini index                      | 0.0074***<br>(0.0002) | 0.0074***<br>(0.0007) | 0.0076***<br>(0.0002)  | 0.0076***<br>(0.0007) | 0.0037***<br>(0.0002)  | 0.0037***<br>(0.0011)  | 0.0038***<br>(0.0002)  | 0.0038***<br>(0.0011)  | 0.0033***<br>(0.0002)  | 0.0033***<br>(0.0011)  | 0.0037***<br>(0.0002)  | 0.0037***<br>(0.0011)  | 0.0038***<br>(0.0002)  | 0.0038***<br>(0.0011)  |
| GDP variation                   |                       |                       | -0.2630***<br>(0.0541) | -0.2630<br>(0.2186)   | 0.6583***<br>(0.0621)  | 0.6583***<br>(0.2089)  | 0.5313***<br>(0.0626)  | 0.5313**<br>(0.2167)   | 0.5801***<br>(0.0618)  | 0.5801***<br>(0.2012)  | 0.6575***<br>(0.0647)  | 0.6575***<br>(0.2176)  | 0.6304***<br>(0.0675)  | 0.6304***<br>(0.2223)  |
| Primary completion rate         |                       |                       | 0.0015***<br>(0.0002)  | 0.0015*<br>(0.0009)   | -0.0008***<br>(0.0002) | -0.0008<br>(0.0007)    | -0.0012***<br>(0.0002) | -0.0012*<br>(0.0007)   | -0.0001<br>(0.0002)    | -0.0001<br>(0.0008)    | -0.0008***<br>(0.0002) | -0.0008<br>(0.0007)    | -0.0007***<br>(0.0002) | -0.0007<br>(0.0008)    |
| Poverty ratio at \$1.90 a day   |                       |                       | -0.0003***<br>(0.0001) | -0.0003<br>(0.0004)   | 0.0000<br>(0.0001)     | 0.0000<br>(0.0004)     |                        |                        |                        |                        | 0.0000<br>(0.0001)     | 0.0000<br>(0.0004)     | -0.0001<br>(0.0001)    | -0.0001<br>(0.0004)    |
| Poverty gap                     |                       |                       |                        |                       |                        |                        | -0.0014***<br>(0.0003) | -0.0014<br>(0.0009)    |                        |                        |                        |                        |                        |                        |
| Poverty ratio at \$3.20 a day   |                       |                       |                        |                       |                        |                        |                        |                        | 0.0007***<br>(0.0001)  | 0.0007*<br>(0.0004)    |                        |                        |                        |                        |
| GDP per capita                  |                       |                       |                        |                       |                        |                        |                        |                        |                        |                        | -0.0000<br>(0.0000)    | -0.0000<br>(0.0000)    |                        |                        |
| Log (GDP per capita)            |                       |                       |                        |                       |                        |                        |                        |                        |                        |                        |                        |                        | -0.0044<br>(0.0048)    | -0.0044<br>(0.0130)    |
| Eastern Europe                  |                       |                       |                        |                       | -0.0814***<br>(0.0061) | -0.0814***<br>(0.0182) | -0.0812***<br>(0.0061) | -0.0812***<br>(0.0175) | -0.0777***<br>(0.0061) | -0.0777***<br>(0.0183) | -0.0816***<br>(0.0080) | -0.0816***<br>(0.0205) | -0.0838***<br>(0.0067) | -0.0838***<br>(0.0184) |
| Latin America and the Caribbean |                       |                       |                        |                       | 0.1181***<br>(0.0074)  | 0.1181***<br>(0.0226)  | 0.1366***<br>(0.0077)  | 0.1366***<br>(0.0230)  | 0.1189***<br>(0.0074)  | 0.1189***<br>(0.0228)  | 0.1178***<br>(0.0099)  | 0.1178***<br>(0.0292)  | 0.1139***<br>(0.0087)  | 0.1139***<br>(0.0263)  |
| North America                   |                       |                       |                        |                       | 0.0127<br>(0.0100)     | 0.0127<br>(0.0213)     | 0.0059<br>(0.0100)     | 0.0059<br>(0.0209)     | 0.0182*<br>(0.0100)    | 0.0182<br>(0.0214)     | 0.0128<br>(0.0102)     | 0.0128<br>(0.0225)     | 0.0126<br>(0.0100)     | 0.0126<br>(0.0213)     |
| Africa                          |                       |                       |                        |                       | -0.0337***<br>(0.0064) | -0.0337*<br>(0.0179)   | -0.0224***<br>(0.0064) | -0.0224<br>(0.0171)    | -0.0458***<br>(0.0066) | -0.0458**<br>(0.0194)  | -0.0340***<br>(0.0101) | -0.0340<br>(0.0269)    | -0.0392***<br>(0.0088) | -0.0392*<br>(0.0235)   |
| Asia                            |                       |                       |                        |                       | -0.0816***<br>(0.0062) | -0.0816***<br>(0.0188) | -0.0735***<br>(0.0062) | -0.0735***<br>(0.0177) | -0.0874***<br>(0.0062) | -0.0874***<br>(0.0194) | -0.0819***<br>(0.0090) | -0.0819***<br>(0.0257) | -0.0852***<br>(0.0073) | -0.0852***<br>(0.0216) |
| Observations                    | 60,472                | 60,472                | 60,472                 | 60,472                | 60,472                 | 60,472                 | 59,474                 | 59,474                 | 60,472                 | 60,472                 | 60,472                 | 60,472                 | 60,472                 | 60,472                 |
| R-squared                       | 0.0408                | 0.0408                | 0.0431                 | 0.0431                | 0.0692                 | 0.0692                 | 0.0725                 | 0.0725                 | 0.0701                 | 0.0701                 | 0.0692                 | 0.0692                 | 0.0692                 | 0.0692                 |
| Year dummies                    | YES                   | YES                   | YES                    | YES                   | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors                 | Robust                | Region cluster        | Robust                 | Region cluster        | Robust                 | Region cluster         | Robust                 | Region cluster         | Robust                 | Region cluster         | Robust                 | Region cluster         | Robust                 | Region cluster         |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Crime victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a crime during the last twelve months, and 0 otherwise (source: World Values Survey). **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa** and **Asia** are continental dummies (Western Europe is excluded). 42 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the region (subnational) level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

We now turn to the Latinobarómetro crime victimization results collected on the LAC countries for the period 1995–2018. Figure 5 shows the trends in inequality and crime victimization averages in the region. Both inequality and victimization increased until 1999, but declined thereafter, with smoother changes in inequality than in homicides.<sup>21</sup>

**Figure 5.** Victimization Rate and Inequality, Latin American and Caribbean Countries, 1995–2018



Source: Authors’ calculations based on data from the Latinobarómetro Survey (victimization rate) and the World Bank (Gini indexes) for Latin American and Caribbean (LAC) countries.

Note: The graph represents the victimization rate average on the left vertical axis, and the Gini index average on the right vertical axis. For each country-year, the victimization rate is the percentage of families that answered in the Latinobarómetro survey that at least one of its members had been a victim of a crime during the last twelve months. Averages are calculated using the sample of countries available for each year. Although not every country is available every year, the sample includes 18 LAC countries. Linear trends are shown by dotted lines.

In Table 4, we use the Latinobarómetro victimization data for our econometric analysis. For each specification, we consider three alternative estimations of the standard errors—robust, clustered at the regional (subnational) level, and clustered at the city level—to allow for both cross-sectional and over time correlations of shocks within a given geographical area.<sup>22</sup> All regressions include country fixed effects. The first three columns show a significant and positive coefficient for inequality in the various standard error estimations. The inequality coefficient and its significance do not vary in columns 4 to 6 when control variables are included. The coefficients on GDP variation, educational attainment and poverty have the expected signs, although the poverty coefficient is not significant. The simple average of the (average) country victimization rates in the sample is 35.69 percent.<sup>23</sup> The estimated coefficient associates an increase in the Gini index of 10 points with an increase in the victimization rate of 5.9 percentage points, that is, an increase of 16.6 percent of the baseline level. The individual country dummies (available upon request) indicate that the countries with the highest “excess” victimization are Mexico, Venezuela, Guatemala, Argentina, Peru, and El Salvador, in that order.

<sup>21</sup> Appendix Figure A.2 shows similar trends in the population-weighted Latinobarómetro averages.

<sup>22</sup> All the results are similar considering standard errors clustered at the country level. The results are also unaltered using Latinobarómetro sampling weights in weighted regressions.

<sup>23</sup> The population-weighted average of the (average) country victimization rates is 38.56 percent.

As before, in the rest of the table we introduce alternative poverty measures: the poverty gap in columns 6 to 9, and the poverty headcount ratio at \$3.20 a day in columns 10 to 12. The signs of the poverty coefficients are unstable. Again, the relationship that appears always positive and statistically significant in all these specifications is the one between inequality and crime.<sup>24, 25</sup>

**Table 4.** Crime Victimization and Inequality, Latin American and Caribbean Countries, 1995–2018

| Variables                     | Crime victimization   |                       |                       |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|-------------------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                               | (1)                   | (2)                   | (3)                   | (4)                    | (5)                    | (6)                    | (7)                    | (8)                    | (9)                    | (10)                   | (11)                   | (12)                   |
| Gini index                    | 0.0053***<br>(0.0005) | 0.0053***<br>(0.0018) | 0.0053***<br>(0.0013) | 0.0059***<br>(0.0006)  | 0.0059***<br>(0.0022)  | 0.0059***<br>(0.0017)  | 0.0062***<br>(0.0006)  | 0.0062***<br>(0.0021)  | 0.0062***<br>(0.0016)  | 0.0054***<br>(0.0006)  | 0.0054**<br>(0.0023)   | 0.0054***<br>(0.0018)  |
| GDP variation                 |                       |                       |                       | -0.2789***<br>(0.0371) | -0.2789***<br>(0.0965) | -0.2789***<br>(0.0717) | -0.2789***<br>(0.0371) | -0.2789***<br>(0.0964) | -0.2789***<br>(0.0709) | -0.2738***<br>(0.0372) | -0.2738***<br>(0.0977) | -0.2738***<br>(0.0730) |
| Primary completion rate       |                       |                       |                       | -0.0013***<br>(0.0002) | -0.0013<br>(0.0008)    | -0.0013**<br>(0.0006)  | -0.0013***<br>(0.0002) | -0.0013<br>(0.0008)    | -0.0013**<br>(0.0006)  | -0.0013***<br>(0.0002) | -0.0013<br>(0.0008)    | -0.0013**<br>(0.0006)  |
| Poverty ratio at \$1.90 a day |                       |                       |                       | 0.0002<br>(0.0004)     | 0.0002<br>(0.0017)     | 0.0002<br>(0.0014)     |                        |                        |                        |                        |                        |                        |
| Poverty gap                   |                       |                       |                       |                        |                        |                        |                        | -0.0002<br>(0.0008)    | -0.0002<br>(0.0028)    | -0.0002<br>(0.0023)    |                        |                        |
| Poverty ratio at \$3.20 a day |                       |                       |                       |                        |                        |                        |                        |                        |                        | 0.0007**<br>(0.0003)   | 0.0007<br>(0.0012)     | 0.0007<br>(0.0010)     |
| Observations                  | 281,418               | 281,418               | 281,418               | 281,418                | 281,418                | 281,418                | 281,418                | 281,418                | 281,418                | 281,418                | 281,418                | 281,418                |
| R-squared                     | 0.0264                | 0.0264                | 0.0264                | 0.0267                 | 0.0267                 | 0.0267                 | 0.0267                 | 0.0267                 | 0.0267                 | 0.0267                 | 0.0267                 | 0.0267                 |
| Country dummies               | YES                   | YES                   | YES                   | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Year dummies                  | YES                   | YES                   | YES                   | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors               | Robust                | Region cluster        | City cluster          | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Crime victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a crime during the last twelve months, and 0 otherwise (source: Latinobarómetro). The Latinobarómetro survey was not performed in 1999, 2012 and 2014. The crime victimization question was not included in the 2000 Latinobarómetro survey. **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. 18 countries are included. All regressions include year and country dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 4, 7 and 10. Standard errors clustered at the region (subnational) level in columns 2, 5, 8 and 11. Standard errors clustered at the city level in columns 3, 6, 9 and 12. \*\*\* p < .01 \*\* p < .05 \* p < .1.

We now again use the Latinobarómetro crime victimization data, but also exploit data provided by CEDLAS on inequality and poverty at the subnational level. The number of observations is reduced because these data cover a shorter time span, but we gain intra-country variability in inequality and poverty. Using these variables, Table 5 first reproduces Table 4 and reaches

<sup>24</sup> The results on inequality do not vary if we control for GDP per capita or its log, although the coefficients on these variables have, unexpectedly, a positive sign (remember, however, that the regressions already include country fixed effects and GDP variations).

<sup>25</sup> The Latinobarómetro survey results are frequently published using country-year averages. In Appendix Table A1, we present the same regressions of Table 4, but using the country-year average victimization rates as dependent variables. Again, inequality shows a positive and statistically significant relationship with crime. The magnitude of the coefficient is stable across specifications and in line with the individual level results in Table 4. The coefficients on GDP variation, educational attainment and poverty show the expected signs, but education and poverty are not significant. In this specification, GDP per capita and its log again show a positive and significant coefficient.

similar results. The coefficient on inequality is always positive and significant. In columns 4 to 6 (with controls), the coefficient relates a Gini increase of 10 points to an increase in the victimization rate of 4.1 percentage points. Economic activity and primary completion reduce crime. Poverty increases are unexpectedly associated with crime reductions, including when the subregional CEDLAS poverty measures are considered in columns 13 to 15.

**Table 5.** Crime Victimization and Subnational Inequality, Latin American and Caribbean Countries, 2011–2018

| Variables                     | Crime victimization   |                     |                     |                       |                     |                     |                       |                     |                     |                        |                      |                      |                        |                        |                        |
|-------------------------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|---------------------|------------------------|----------------------|----------------------|------------------------|------------------------|------------------------|
|                               | (1)                   | (2)                 | (3)                 | (4)                   | (5)                 | (6)                 | (7)                   | (8)                 | (9)                 | (10)                   | (11)                 | (12)                 | (13)                   | (14)                   | (15)                   |
| Gini index (CEDLAS)           | 0.0039***<br>(0.0006) | 0.0039*<br>(0.0022) | 0.0039*<br>(0.0020) | 0.0041***<br>(0.0006) | 0.0041*<br>(0.0023) | 0.0041*<br>(0.0021) | 0.0040***<br>(0.0006) | 0.0040*<br>(0.0023) | 0.0040*<br>(0.0021) | 0.0041***<br>(0.0006)  | 0.0041*<br>(0.0023)  | 0.0041**<br>(0.0021) | 0.0080***<br>(0.0007)  | 0.0080***<br>(0.0023)  | 0.0080***<br>(0.0021)  |
| GDP variation                 |                       |                     |                     | -0.3153**<br>(0.1461) | -0.3153<br>(0.3094) | -0.3153<br>(0.2603) | -0.2780*<br>(0.1451)  | -0.2780<br>(0.3100) | -0.2780<br>(0.2616) | -0.3809***<br>(0.1477) | -0.3809<br>(0.3155)  | -0.3809<br>(0.2573)  | -0.3607**<br>(0.1453)  | -0.3607<br>(0.3103)    | -0.3607<br>(0.2597)    |
| Primary completion rate       |                       |                     |                     | -0.0004<br>(0.0008)   | -0.0004<br>(0.0015) | -0.0004<br>(0.0015) | -0.0003<br>(0.0008)   | -0.0003<br>(0.0016) | -0.0003<br>(0.0015) | -0.0005<br>(0.0008)    | -0.0005<br>(0.0015)  | -0.0005<br>(0.0015)  | -0.0004<br>(0.0008)    | -0.0004<br>(0.0017)    | -0.0004<br>(0.0015)    |
| Poverty ratio at \$1.90 a day |                       |                     |                     | -0.0119**<br>(0.0054) | -0.0119<br>(0.0106) | -0.0119<br>(0.0095) |                       |                     |                     |                        |                      |                      |                        |                        |                        |
| Poverty gap                   |                       |                     |                     |                       |                     |                     | -0.0209**<br>(0.0100) | -0.0209<br>(0.0158) | -0.0209<br>(0.0146) |                        |                      |                      |                        |                        |                        |
| Poverty ratio at \$3.20 a day |                       |                     |                     |                       |                     |                     |                       |                     |                     | -0.0106***<br>(0.0029) | -0.0106*<br>(0.0059) | -0.0106*<br>(0.0056) |                        |                        |                        |
| Poverty rate (CEDLAS)         |                       |                     |                     |                       |                     |                     |                       |                     |                     |                        |                      |                      | -0.0035***<br>(0.0002) | -0.0035***<br>(0.0007) | -0.0035***<br>(0.0007) |
| Observations                  | 65,177                | 65,177              | 65,177              | 65,177                | 65,177              | 65,177              | 65,177                | 65,177              | 65,177              | 65,177                 | 65,177               | 65,177               | 65,177                 | 65,177                 | 65,177                 |
| R-squared                     | 0.0376                | 0.0376              | 0.0376              | 0.0378                | 0.0378              | 0.0378              | 0.0377                | 0.0377              | 0.0377              | 0.0379                 | 0.0379               | 0.0379               | 0.0420                 | 0.0420                 | 0.0420                 |
| Country dummies               | YES                   | YES                 | YES                 | YES                   | YES                 | YES                 | YES                   | YES                 | YES                 | YES                    | YES                  | YES                  | YES                    | YES                    | YES                    |
| Year dummies                  | YES                   | YES                 | YES                 | YES                   | YES                 | YES                 | YES                   | YES                 | YES                 | YES                    | YES                  | YES                  | YES                    | YES                    | YES                    |
| Standard errors               | Robust                | Region cluster      | City cluster        | Robust                | Region cluster      | City cluster        | Robust                | Region cluster      | City cluster        | Robust                 | Region cluster       | City cluster         | Robust                 | Region cluster         | City cluster           |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Crime victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a crime during the last twelve months, and 0 otherwise (source: Latinobarómetro). The Latinobarómetro survey was not performed in 2012 and 2014. **Gini index (CEDLAS)** is defined from 0 to 100 (source: CEDLAS). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Poverty rate (CEDLAS)** is the percentage of the population living on less than \$4.00 considering the per-capita family income. 14 countries are included. All regressions include year and country dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 4, 7, 10 and 13. Standard errors clustered at the region (subnational) level in columns 2, 5, 8, 11 and 14. Standard errors clustered at the city level in columns 3, 6, 9, 12 and 15. \*\*\* p < .01 \*\* p < .05 \* p < .1.

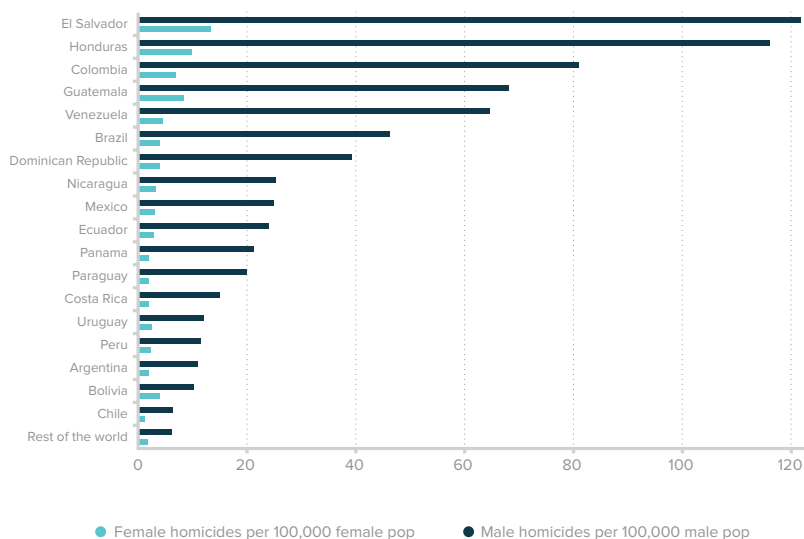
In summary, all the regressions show a positive, significant and robust relationship between inequality and crime using homicide and survey victimization data from four alternative databases that cover countries on different continents or that focus on Latin America and the Caribbean, considering various controls and standard error estimates, and including inequality measures at the national and subnational levels. Moreover, inequality is the only variable showing this robust regularity. Educational attainment, economic activity, income per capita and poverty show much weaker and unstable relationships with crime levels.

## 5. The Distribution of Crime Victimization

In this section, we explore the distribution of crime victimization across population groups by considering sex, socio-economic level, age, education, and ethnicity. We also analyze patterns by type of crime, and concerns about crime.

We first consider in detail homicide victimization by gender. We use the World Bank homicide statistics disaggregated by victim gender, but all the gender results (available upon request) are similar using the larger database of the Global Burden of Disease Study.<sup>26</sup> Men suffer more homicides than women. The average female-to-male homicide ratio in our world sample is 0.375. The gender difference, however, is wider in LAC countries. There are 0.145 female homicides per each male homicide in LAC, whereas, in the rest of the world, the average is 0.442, about three times larger. Figure 6 presents the female and male average homicide rates (using the available observations for each country for the period 1995–2017) per 100,000 population for the LAC countries and the rest of the world. The ratio of female to male homicides in every LAC country is lower than the average in the rest of the world.

**Figure 6.** Male and Female Homicides, Latin American and Caribbean Countries



Source: Authors' calculations based on data of the World Bank.

Note: The horizontal dark blue bar represents the country average of intentional male homicides per 100,000 male population calculated for the available country-year observations from 1995 to 2017 (source: World Bank). The turquoise bar represents the country average of intentional female homicides per 100,000 female population calculated for the available country-year observations from 1995 to 2017 (source: World Bank).

Table 6 on female homicides and Table 7 on male homicides reproduce Table 1. The results in these three tables are qualitatively similar. There is a robust and positive relationship be-

<sup>26</sup> The gender disaggregated World Bank homicide data are available for 832 of the 1,124 country-year observations previously utilized in Table 1. Appendix A.5 lists the country-year observations with available World Bank gender homicide data.

tween inequality and homicides, and the continental coefficients show that the LAC region suffers “excess” homicides for both sexes.

**Table 6.** Female Homicides and Inequality, World, 1995–2017

| Variables                       | Female homicides      |                       |                       |                       |                       |                       |                       |                       |                       |                      |                        |                     |                        |                      |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|------------------------|---------------------|------------------------|----------------------|
|                                 | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   | (9)                   | (10)                 | (11)                   | (12)                | (13)                   | (14)                 |
| Gini index                      | 0.1331***<br>(0.0104) | 0.1331***<br>(0.0334) | 0.1211***<br>(0.0102) | 0.1211***<br>(0.0338) | 0.0601**<br>(0.0275)  | 0.0601<br>(0.0838)    | 0.0626**<br>(0.0272)  | 0.0626<br>(0.0827)    | 0.0549**<br>(0.0277)  | 0.0549<br>(0.0845)   | 0.0557**<br>(0.0281)   | 0.0557<br>(0.0855)  | 0.0718***<br>(0.0264)  | 0.0718<br>(0.0792)   |
| GDP variation                   |                       |                       | 5.0092**<br>(2.4797)  | 5.0092<br>(4.1226)    | 0.9450<br>(2.4861)    | 0.9450<br>(3.3904)    | 1.1022<br>(2.4765)    | 1.1022<br>(3.3102)    | 0.4395<br>(2.5204)    | 0.4395<br>(3.6483)   | 0.2005<br>(2.4998)     | 0.2005<br>(3.5760)  | -1.0728<br>(2.5160)    | -1.0728<br>(3.8188)  |
| Primary completion rate         |                       |                       | -0.0272**<br>(0.0128) | -0.0272<br>(0.0336)   | -0.0303**<br>(0.0127) | -0.0303<br>(0.0340)   | -0.0325**<br>(0.0127) | -0.0325<br>(0.0345)   | -0.0271**<br>(0.0126) | -0.0271<br>(0.0334)  | -0.0306**<br>(0.0126)  | -0.0306<br>(0.0340) | -0.0198<br>(0.0122)    | -0.0198<br>(0.0325)  |
| Poverty ratio at \$1.90 a day   |                       |                       | 0.0306**<br>(0.0147)  | 0.0306<br>(0.0391)    | 0.0335**<br>(0.0167)  | 0.0335<br>(0.0482)    |                       |                       |                       |                      | 0.0200<br>(0.0163)     | 0.0200<br>(0.0465)  | -0.0359*<br>(0.0184)   | -0.0359<br>(0.0525)  |
| Poverty gap                     |                       |                       |                       |                       |                       |                       | 0.0585<br>(0.0489)    | 0.0585<br>(0.1301)    |                       |                      |                        |                     |                        |                      |
| Poverty ratio at \$3.20 a day   |                       |                       |                       |                       |                       |                       |                       |                       | 0.0296**<br>(0.0083)  | 0.0296<br>(0.0253)   |                        |                     |                        |                      |
| GDP per capita                  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                      | -0.0000***<br>(0.0000) | -0.0000<br>(0.0000) |                        |                      |
| Log (GDP per capita)            |                       |                       |                       |                       |                       |                       |                       |                       |                       |                      |                        |                     | -1.3611***<br>(0.2343) | -1.3611*<br>(0.7003) |
| Eastern Europe                  |                       |                       |                       |                       | 1.2999***<br>(0.1407) | 1.2999***<br>(0.4893) | 1.3382***<br>(0.1362) | 1.3382***<br>(0.4655) | 1.2186***<br>(0.1425) | 1.2186**<br>(0.5008) | 0.5127**<br>(0.2020)   | 0.5127<br>(0.6892)  | 0.1367<br>(0.2095)     | 0.1367<br>(0.6943)   |
| Latin America and the Caribbean |                       |                       |                       |                       | 2.1273***<br>(0.6304) | 2.1273<br>(2.0020)    | 2.1409***<br>(0.6323) | 2.1409<br>(2.0126)    | 2.0277***<br>(0.6168) | 2.0277<br>(1.9437)   | 1.2688**<br>(0.5202)   | 1.2688<br>(1.6248)  | 0.5870<br>(0.4887)     | 0.5870<br>(1.4778)   |
| North America                   |                       |                       |                       |                       | 0.5320*<br>(0.3013)   | 0.5320<br>(0.7711)    | 0.5070*<br>(0.2977)   | 0.5070<br>(0.7543)    | 0.5894*<br>(0.3042)   | 0.5894<br>(0.7843)   | 0.6001*<br>(0.3301)    | 0.6001<br>(0.8632)  | 0.5586*<br>(0.3124)    | 0.5586<br>(0.8075)   |
| Africa                          |                       |                       |                       |                       | 0.4858<br>(0.8632)    | 0.4858<br>(1.5496)    | 0.7771<br>(0.8668)    | 0.7771<br>(1.5660)    | -0.0093<br>(0.8663)   | -0.0093<br>(1.5234)  | -0.3912<br>(0.9196)    | -0.3912<br>(1.6845) | -0.8492<br>(0.9665)    | -0.8492<br>(1.7177)  |
| Asia                            |                       |                       |                       |                       | 0.7596***<br>(0.2290) | 0.7596<br>(0.6088)    | 0.8477***<br>(0.2336) | 0.8477<br>(0.6444)    | 0.4426*<br>(0.2319)   | 0.4426<br>(0.5969)   | -0.1865<br>(0.2703)    | -0.1865<br>(0.7664) | -0.9998***<br>(0.3365) | -0.9998<br>(0.9708)  |
| Year dummies                    | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                  | YES                    | YES                 | YES                    | YES                  |
| Standard errors                 | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster      | Robust                 | Country cluster     | Robust                 | Country cluster      |
| R-squared                       | 0.2135                | 0.2135                | 0.2291                | 0.2291                | 0.2705                | 0.2705                | 0.2682                | 0.2682                | 0.2779                | 0.2779               | 0.2803                 | 0.2803              | 0.3081                 | 0.3081               |
| Observations                    | 832                   | 832                   | 832                   | 832                   | 832                   | 832                   | 832                   | 832                   | 832                   | 832                  | 832                    | 832                 | 832                    | 832                  |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the rate of intentional **Female homicides** per 100,000 female population (source: World Bank). **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa** and **Asia** are continental dummies (Western Europe is). 80 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

Table 7. Male Homicides and Inequality, World, 1995–2017

| Variables                       | Male homicides        |                       |                        |                       |                         |                       |                        |                       |                         |                       |                         |                       |                          |                       |
|---------------------------------|-----------------------|-----------------------|------------------------|-----------------------|-------------------------|-----------------------|------------------------|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|--------------------------|-----------------------|
|                                 | (1)                   | (2)                   | (3)                    | (4)                   | (5)                     | (6)                   | (7)                    | (8)                   | (9)                     | (10)                  | (11)                    | (12)                  | (13)                     | (14)                  |
| Gini index                      | 1.7765***<br>(0.1140) | 1.7765***<br>(0.3773) | 1.6457***<br>(0.1041)  | 1.6457***<br>(0.3355) | 0.5147**<br>(0.2037)    | 0.5147<br>(0.5691)    | 0.4514**<br>(0.2027)   | 0.4514<br>(0.5389)    | 0.5012**<br>(0.2070)    | 0.5012<br>(0.5871)    | 0.4834**<br>(0.2082)    | 0.4834<br>(0.5838)    | 0.5948***<br>(0.1918)    | 0.5948<br>(0.5201)    |
| GDP variation                   |                       |                       | -28.4442*<br>(15.8470) | -28.4442<br>(26.8774) | -33.3472**<br>(16.1606) | -33.3472<br>(25.0949) | -27.9704*<br>(15.5070) | -27.9704<br>(24.3860) | -39.9489**<br>(16.7438) | -39.9489<br>(27.3425) | -38.6066**<br>(16.6837) | -38.6066<br>(27.5470) | -47.1483***<br>(18.0303) | -47.1483<br>(30.9767) |
| Primary completion rate         |                       |                       | -0.2347**<br>(0.1186)  | -0.2347<br>(0.3039)   | -0.2854**<br>(0.1145)   | -0.2854<br>(0.3131)   | -0.2779**<br>(0.1155)  | -0.2779<br>(0.3179)   | -0.2732**<br>(0.1148)   | -0.2732<br>(0.3152)   | -0.2874**<br>(0.1143)   | -0.2874<br>(0.3125)   | -0.2139**<br>(0.1067)    | -0.2139<br>(0.2843)   |
| Poverty ratio at \$1.90 a day   |                       |                       | 0.3638**<br>(0.1498)   | 0.3638<br>(0.2844)    | 0.5933***<br>(0.1595)   | 0.5933<br>(0.3770)    |                        |                       |                         |                       | 0.4983***<br>(0.1567)   | 0.4983<br>(0.3646)    | 0.1184<br>(0.1788)       | 0.1184<br>(0.4162)    |
| Poverty gap                     |                       |                       |                        |                       |                         |                       | 1.8106***<br>(0.5531)  | 1.8106*<br>(1.0844)   |                         |                       |                         |                       |                          |                       |
| Poverty ratio at \$3.20 a day   |                       |                       |                        |                       |                         |                       |                        |                       | 0.3752***<br>(0.0724)   | 0.3752*<br>(0.2029)   |                         |                       |                          |                       |
| GDP per capita                  |                       |                       |                        |                       |                         |                       |                        |                       |                         |                       | -0.0002***<br>(0.0001)  | -0.0002<br>(0.0002)   |                          |                       |
| Log (GDP per capita)            |                       |                       |                        |                       |                         |                       |                        |                       |                         |                       |                         |                       | -9.3097***<br>(2.2121)   | -9.3097<br>(6.6312)   |
| Eastern Europe                  |                       |                       |                        |                       | 3.9455***<br>(0.8766)   | 3.9455<br>(2.4505)    | 4.5230***<br>(0.8421)  | 4.5230*<br>(2.3650)   | 3.1472***<br>(0.8783)   | 3.1472<br>(2.4256)    | -1.6151<br>(1.4060)     | -1.6151<br>(4.2907)   | -4.0103**<br>(1.7250)    | -4.0103<br>(5.1713)   |
| Latin America and the Caribbean |                       |                       |                        |                       | 28.2332***<br>(5.3099)  | 28.2332*<br>(16.2967) | 28.5556***<br>(5.3409) | 28.5556*<br>(16.4029) | 27.0098***<br>(5.2176)  | 27.0098*<br>(15.8921) | 22.1689***<br>(4.2357)  | 22.1689*<br>(12.7467) | 17.6982***<br>(4.0651)   | 17.6982<br>(11.7516)  |
| North America                   |                       |                       |                        |                       | 2.5932<br>(2.0272)      | 2.5932<br>(4.4748)    | 2.8858<br>(2.0421)     | 2.8858<br>(4.3003)    | 2.9163<br>(2.0826)      | 2.9163<br>(4.6176)    | 3.0743<br>(2.1339)      | 3.0743<br>(4.9737)    | 2.7754<br>(2.0544)       | 2.7754<br>(4.5532)    |
| Africa                          |                       |                       |                        |                       | -8.8664<br>(6.7769)     | -8.8664<br>(14.6209)  | -7.9782<br>(6.8919)    | -7.9782<br>(14.3762)  | -12.0496*<br>(6.5050)   | -12.0496<br>(13.9754) | -15.0619**<br>(6.9764)  | -15.0619<br>(15.4154) | -17.9972**<br>(7.1199)   | -17.9972<br>(16.0690) |
| Asia                            |                       |                       |                        |                       | 1.9569<br>(1.6962)      | 1.9569<br>(4.3339)    | 3.2751**<br>(1.5943)   | 3.2751<br>(4.1191)    | -1.5248<br>(1.8606)     | -1.5248<br>(4.9098)   | -4.7261**<br>(1.9964)   | -4.7261<br>(5.7055)   | -10.0768***<br>(2.8904)  | -10.0768<br>(8.5391)  |
| Year dummies                    | YES                   | YES                   | YES                    | YES                   | YES                     | YES                   | YES                    | YES                   | YES                     | YES                   | YES                     | YES                   | YES                      | YES                   |
| Standard errors                 | Robust                | Country cluster       | Robust                 | Country cluster       | Robust                  | Country cluster       | Robust                 | Country cluster       | Robust                  | Country cluster       | Robust                  | Country cluster       | Robust                   | Country cluster       |
| R-squared                       | 0.3740                | 0.3740                | 0.3890                 | 0.3890                | 0.4519                  | 0.4519                | 0.4558                 | 0.4558                | 0.4584                  | 0.4584                | 0.4573                  | 0.4573                | 0.4712                   | 0.4712                |
| Observations                    | 832                   | 832                   | 832                    | 832                   | 832                     | 832                   | 832                    | 832                   | 832                     | 832                   | 832                     | 832                   | 832                      | 832                   |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the rate of intentional **Male Homicides** per 100,000 male population (source: World Bank). **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa and Asia** are continental dummies (Western Europe is excluded). 80 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

However, the effect of inequality on homicides seems stronger in the case of male homicides. In Table 8, our dependent variable is the country-year ratio of female to male homicides. The negative and significant coefficient shows that, with inequality, male homicides grow more than female homicides. This result is confirmed in Appendix Tables A.2 and A.3 in which log regressions are used to show that the elasticity of male homicides to inequality is more than two times larger than the corresponding elasticity of female homicides. Moreover, the negative and significant LAC dummy coefficient in Table 8 coincides with Figure 6 in showing that the female-to-male homicide ratio is lower in the region.<sup>27</sup> A potential explanation for these findings

<sup>27</sup> Jaitman and Torre (2017) show a striking concentration of homicides among young males in LAC. See also De Mello and Schneider (2010).

is that, relative to female homicides, male homicides are more closely tied to economic motives (including organized crime) and are therefore relatively more prevalent in LAC countries.

**Table 8.** Ratio of Female Homicides to Male Homicides and Inequality, World, 1995–2017

| Variables                       | Ratio: female homicides to male homicides |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                 | (1)                                       | (2)                    | (3)                    | (4)                    | (5)                    | (6)                    | (7)                    | (8)                    | (9)                    | (10)                   | (11)                   | (12)                   | (13)                   | (14)                   |
| Gini index                      | -0.0193***<br>(0.0008)                    | -0.0193***<br>(0.0020) | -0.0189***<br>(0.0009) | -0.0189***<br>(0.0020) | -0.0109***<br>(0.0020) | -0.0109***<br>(0.0038) | -0.0111***<br>(0.0021) | -0.0111***<br>(0.0039) | -0.0106***<br>(0.0018) | -0.0106***<br>(0.0037) | -0.0100***<br>(0.0019) | -0.0100***<br>(0.0032) | -0.0118***<br>(0.0022) | -0.0118***<br>(0.0035) |
| GDP variation                   |   |                        | -0.9728***<br>(0.2369) | -0.9728***<br>(0.3426) | -0.3403<br>(0.2532)    | -0.3403<br>(0.2706)    | -0.3247<br>(0.2540)    | -0.3247<br>(0.2687)    | -0.3491<br>(0.2539)    | -0.3491<br>(0.2712)    | -0.1974<br>(0.2368)    | -0.1974<br>(0.2440)    | -0.1868<br>(0.2450)    | -0.1868<br>(0.2492)    |
| Primary completion rate         |   |                        | 0.0023<br>(0.0029)     | 0.0023<br>(0.0030)     | 0.0024<br>(0.0028)     | 0.0024<br>(0.0026)     | 0.0024<br>(0.0028)     | 0.0024<br>(0.0026)     | 0.0022<br>(0.0030)     | 0.0022<br>(0.0027)     | 0.0024<br>(0.0029)     | 0.0024<br>(0.0028)     | 0.0016<br>(0.0031)     | 0.0016<br>(0.0029)     |
| Poverty ratio at \$1.90 a day   |   |                        | -0.0005<br>(0.0016)    | -0.0005<br>(0.0024)    | 0.0015<br>(0.0015)     | 0.0015<br>(0.0020)     |                        |                        |                        |                        | 0.0041***<br>(0.0015)  | 0.0041*<br>(0.0021)    | 0.0068***<br>(0.0017)  | 0.0068**<br>(0.0029)   |
| Poverty gap                     |   |                        |                        |                        |                        |                        | 0.0052<br>(0.0033)     | 0.0052<br>(0.0045)     |                        |                        |                        |                        |                        |                        |
| Poverty ratio at \$3.20 a day   |   |                        |                        |                        |                        |                        |                        |                        | 0.0004<br>(0.0012)     | 0.0004<br>(0.0012)     |                        |                        |                        |                        |
| GDP per capita                  |   |                        |                        |                        |                        |                        |                        |                        |                        |                        | 0.0000***<br>(0.0000)  | 0.0000**<br>(0.0000)   |                        |                        |
| Log (GDP per capita)            |   |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        |                        | 0.1036***<br>(0.0361)  | 0.1036**<br>(0.0437)   |
| Eastern Europe                  |   |                        |                        |                        | -0.1131***<br>(0.0330) | -0.1131<br>(0.0790)    | -0.1117***<br>(0.0334) | -0.1117<br>(0.0790)    | -0.1129***<br>(0.0319) | -0.1129<br>(0.0791)    | 0.0386<br>(0.0456)     | 0.0386<br>(0.0903)     | -0.0246<br>(0.0366)    | -0.0246<br>(0.0814)    |
| Latin America and the Caribbean |   |                        |                        |                        | -0.2755***<br>(0.0456) | -0.2755***<br>(0.1004) | -0.2746***<br>(0.0454) | -0.2746***<br>(0.1004) | -0.2767***<br>(0.0476) | -0.2767***<br>(0.1006) | -0.1102<br>(0.0695)    | -0.1102<br>(0.1064)    | -0.1582**<br>(0.0743)  | -0.1582<br>(0.1117)    |
| North America                   |   |                        |                        |                        | -0.2008***<br>(0.0388) | -0.2008**<br>(0.0901)  | -0.1996***<br>(0.0392) | -0.1996**<br>(0.0906)  | -0.2024***<br>(0.0382) | -0.2024**<br>(0.0901)  | -0.2139***<br>(0.0429) | -0.2139**<br>(0.0988)  | -0.2029***<br>(0.0390) | -0.2029**<br>(0.0898)  |
| Africa                          |   |                        |                        |                        | -0.2680***<br>(0.0713) | -0.2680**<br>(0.1211)  | -0.2687***<br>(0.0689) | -0.2687**<br>(0.1159)  | -0.2567***<br>(0.0763) | -0.2567**<br>(0.1240)  | -0.0990<br>(0.0789)    | -0.0990<br>(0.1184)    | -0.1663***<br>(0.0770) | -0.1663<br>(0.1140)    |
| Asia                            |   |                        |                        |                        | -0.2584***<br>(0.0296) | -0.2584***<br>(0.0741) | -0.2552***<br>(0.0296) | -0.2552***<br>(0.0751) | -0.2599***<br>(0.0339) | -0.2599***<br>(0.0745) | -0.0761<br>(0.0574)    | -0.0761<br>(0.0944)    | -0.1244**<br>(0.0589)  | -0.1244<br>(0.0906)    |
| Year dummies                    | YES                                       | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors                 | Robust                                    | Country cluster        | Robust                 | Country cluster        | Robust                 | Country cluster        | Robust                 | Country cluster        | Robust                 | Country cluster        | Robust                 | Country cluster        | Robust                 | Country cluster        |
| R-squared                       | 0.2627                                    | 0.2627                 | 0.2734                 | 0.2734                 | 0.3156                 | 0.3156                 | 0.3159                 | 0.3159                 | 0.3153                 | 0.3153                 | 0.3378                 | 0.3378                 | 0.3289                 | 0.3289                 |
| Observations                    | 830                                       | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    | 830                    |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the ratio of the rate of intentional **Female homicides** per 100,000 female population to the rate of intentional **Male homicides** per 100,000 male population (source: World Bank). **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa** and **Asia** are continental dummies (Western Europe is excluded). 80 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

Turning again to victimization surveys, the individual characteristics available in the WVS database are incorporated in Table 9. For each specification, we again consider robust and clustered (at the subnational level) standard errors to allow for potential correlation in shocks. In columns 1 and 2, we first include the sex and age of the interviewed person. Males declare higher victimization. Moreover, victimization falls with age, showing a peak at age 18, the lowest age bound of the WVS surveyed population.<sup>28</sup> Although it is important to bear in

<sup>28</sup> For a tiny number of cases, the WVS respondents are 16 or 17 years old.



mind that the WVS questionnaire refers to household victimization, young males thus seem to bear higher victimization rates.

We then include a set of dummies for five socio-economic categories constructed by WVS from an income scale question. The surveyed households are classified into five categories; we exclude the richest group.<sup>29</sup> The results in columns 3 and 4 suggest that the richest and poorest households are the ones suffering higher crime victimization rates in the WVS database. The poorest group seems to suffer even more crime than the richest. However, if we restrict the WVS sample to only the LAC countries, we find that the richest bear the main burden of crime (results available upon request). The last two columns show that victimization increases with the years of education of the respondent. The previous results do not vary if the respondent's education is included, but the higher victimization rates among the lowest socio-economic group become stronger. The previous results on inequality, economic activity, country educational level and poverty remain unaltered if these individual characteristics are included.

In Table 10, we include individual characteristics in the Latinobarómetro database. To allow for the potential correlation of shocks, we again consider three alternative estimations of the standard errors: robust, clustered at the regional (subnational) level, and clustered at the city level. In columns 1 to 3, we first include the sex and age of the interviewed person. As in the WVS database, LAC males declare higher victimization. Moreover, victimization falls with age, showing a peak at age 18, the lowest age bound of the Latinobarómetro surveyed population.<sup>30</sup> Thus, young males in the LAC region seem to bear higher victimization rates (although remember that the questionnaire refers to household victimization).

In Table 10, columns 4 to 6, we include a set of socio-economic status dummies constructed by Latinobarómetro from interviewer evaluations. The surveyed households are classified into five categories, and the richest group is the omitted category in the regressions.<sup>31</sup> The results suggest that, in LAC countries, higher-income groups suffer more victimization than lower strata and that the differences are statistically significant. These redistributive effects differ from the previous WVS estimates considering the whole sample of countries, but are similar to the WVS results on the LAC sample. They are also similar to the results obtained by Gaviria and Pagés (2002) using the 1996 to 1998 Latinobarómetro waves. Using other victimization surveys, Olavarría Gambi (2015) also shows a concentration of crime victimization in the upper socio-economic strata in Chile, Costa Rica and Honduras, and in Montevideo.<sup>32</sup>

The results do not vary if we include the years of education of the respondent in the last three columns of Table 10. Victimization increases with years of education, although this variable may be capturing part of an imperfect socio-economic level classification. The previous results on inequality, economic activity, education, and poverty remain unaltered if these individual characteristics are included in the Latinobarómetro regressions.

<sup>29</sup> The average proportion of households in each socio-economic category in the WVS survey is very high: 21.1 percent, high: 15.4 percent, middle: 22.1 percent, low: 26.4 percent, and very low: 15.0 percent.

<sup>30</sup> In a small number of cases, the Latinobarómetro respondents are ages 15–17.

<sup>31</sup> The average proportion of households in each socio-economic category in the Latinobarómetro survey is: very high (8.4 percent), high (35.1 percent), middle (41.2 percent), low (12.6 percent), and very low (2.8 percent).

<sup>32</sup> Focusing on increases in crime victimization rather than levels, Di Tella, Galiani, and Scharrogradsky (2010) find that most of the increases in crime victimization in Argentina during the 1990s were concentrated among the poor.

Table 9. Victimization Rate, Inequality, and Household Characteristics, World, 2010–2014

| Variables                       | Crime victimization    |                        |                        |                        |                        |                        |
|---------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                 | (1)                    | (2)                    | (3)                    | (4)                    | (5)                    | (6)                    |
| Gini index                      | 0.0036***<br>(0.0002)  | 0.0036***<br>(0.0011)  | 0.0036***<br>(0.0002)  | 0.0036***<br>(0.0011)  | 0.0036***<br>(0.0002)  | 0.0036***<br>(0.0011)  |
| GDP variation                   | 0.6669***<br>(0.0621)  | 0.6669***<br>(0.2085)  | 0.6840***<br>(0.0628)  | 0.6840***<br>(0.2104)  | 0.6805***<br>(0.0629)  | 0.6805***<br>(0.2116)  |
| Primary completion rate         | -0.0007***<br>(0.0002) | -0.0007<br>(0.0007)    | -0.0008***<br>(0.0002) | -0.0008<br>(0.0007)    | -0.0009***<br>(0.0002) | -0.0009<br>(0.0007)    |
| Poverty ratio at \$1.90 a day   | -0.0000<br>(0.0001)    | -0.0000<br>(0.0004)    | -0.0001<br>(0.0001)    | -0.0001<br>(0.0004)    | -0.0001<br>(0.0001)    | -0.0001<br>(0.0004)    |
| Male                            | 0.0075***<br>(0.0029)  | 0.0075**<br>(0.0036)   | 0.0074**<br>(0.0029)   | 0.0074**<br>(0.0036)   | 0.0068**<br>(0.0029)   | 0.0068*<br>(0.0036)    |
| Age                             | -0.0000<br>(0.0005)    | -0.0000<br>(0.0006)    | -0.0001<br>(0.0005)    | -0.0001<br>(0.0006)    | -0.0001<br>(0.0005)    | -0.0001<br>(0.0006)    |
| Age^2                           | -0.0000**<br>(0.0000)  | -0.0000**<br>(0.0000)  | -0.0000**<br>(0.0000)  | -0.0000*<br>(0.0000)   | -0.0000**<br>(0.0000)  | -0.0000*<br>(0.0000)   |
| Socio-economic status: high     |                        |                        | -0.0117**<br>(0.0048)  | -0.0117*<br>(0.0066)   | -0.0108**<br>(0.0048)  | -0.0108<br>(0.0066)    |
| Socio-economic status: middle   |                        |                        | -0.0098**<br>(0.0044)  | -0.0098<br>(0.0072)    | -0.0077*<br>(0.0044)   | -0.0077<br>(0.0073)    |
| Socio-economic status: low      |                        |                        | -0.0102**<br>(0.0043)  | -0.0102<br>(0.0071)    | -0.0070<br>(0.0043)    | -0.0070<br>(0.0071)    |
| Socio-economic status: very low |                        |                        | 0.0150***<br>(0.0052)  | 0.0150<br>(0.0091)     | 0.0202***<br>(0.0054)  | 0.0202**<br>(0.0092)   |
| Education                       |                        |                        |                        |                        | 0.0019***<br>(0.0004)  | 0.0019**<br>(0.0009)   |
| Eastern Europe                  | -0.0823***<br>(0.0061) | -0.0823***<br>(0.0182) | -0.0832***<br>(0.0062) | -0.0832***<br>(0.0182) | -0.0868***<br>(0.0063) | -0.0868***<br>(0.0178) |
| Latin America and the Caribbean | 0.1122***<br>(0.0075)  | 0.1122***<br>(0.0225)  | 0.1106***<br>(0.0076)  | 0.1106***<br>(0.0227)  | 0.1134***<br>(0.0077)  | 0.1134***<br>(0.0225)  |
| North America                   | 0.0147<br>(0.0100)     | 0.0147<br>(0.0211)     | 0.0151<br>(0.0102)     | 0.0151<br>(0.0212)     | 0.0105<br>(0.0103)     | 0.0105<br>(0.0215)     |
| Africa                          | -0.0459***<br>(0.0065) | -0.0459**<br>(0.0182)  | -0.0469***<br>(0.0067) | -0.0469**<br>(0.0182)  | -0.0402***<br>(0.0068) | -0.0402**<br>(0.0183)  |
| Asia                            | -0.0885***<br>(0.0063) | -0.0885***<br>(0.0189) | -0.0891***<br>(0.0064) | -0.0891***<br>(0.0188) | -0.0874***<br>(0.0064) | -0.0874***<br>(0.0186) |
| Observations                    | 60,438                 | 60,438                 | 58,990                 | 58,990                 | 58,834                 | 58,834                 |
| R-squared                       | 0.0718                 | 0.0718                 | 0.0723                 | 0.0723                 | 0.0728                 | 0.0728                 |
| Year dummies                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors                 | Robust                 | Region cluster         | Robust                 | Region cluster         | Robust                 | Region cluster         |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Crime victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a crime during the last twelve months, and 0 otherwise (source: World Values Survey). **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Male** is a dummy variable that equals one if the respondent is a man, zero otherwise. **Age** is the age of the respondent. **Socio-economic status** are dummies variables defining the socio-economic status of the household according to income brackets declared by the respondent (the highest socio-economic status is excluded). **Eastern Europe, Latin America and the Caribbean, North America, Africa and Asia** are continental dummies (Western Europe is excluded). Education are the years of education of the respondent. 42 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3 and 5. Standard errors clustered at the region (subnational) level in columns 2, 4 and 6. \*\*\* p < .01 \*\* p < .05 \* p < .1.

**Table 10.** Victimization Rate, Inequality and Household Characteristics, Latin American and Caribbean Countries, 1995–2018

| Variables                       | Crime victimization    |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                 | (1)                    | (2)                    | (3)                    | (4)                    | (5)                    | (6)                    | (7)                    | (8)                    | (9)                    |
| Gini index                      | 0.0058***<br>(0.0006)  | 0.0058***<br>(0.0022)  | 0.0058***<br>(0.0017)  | 0.0060***<br>(0.0006)  | 0.0060***<br>(0.0021)  | 0.0060***<br>(0.0017)  | 0.0048***<br>(0.0006)  | 0.0048**<br>(0.0021)   | 0.0048***<br>(0.0016)  |
| GDP variation                   | -0.2772***<br>(0.0370) | -0.2772***<br>(0.0966) | -0.2772***<br>(0.0717) | -0.2756***<br>(0.0370) | -0.2756***<br>(0.0951) | -0.2756***<br>(0.0712) | -0.2417***<br>(0.0369) | -0.2417***<br>(0.0928) | -0.2417***<br>(0.0689) |
| Primary completion rate         | -0.0013***<br>(0.0002) | -0.0013<br>(0.0008)    | -0.0013**<br>(0.0006)  | -0.0013***<br>(0.0002) | -0.0013<br>(0.0008)    | -0.0013**<br>(0.0006)  | -0.0010***<br>(0.0002) | -0.0010<br>(0.0008)    | -0.0010*<br>(0.0006)   |
| Poverty ratio at \$1.90 a day   | 0.0001<br>(0.0004)     | 0.0001<br>(0.0017)     | 0.0001<br>(0.0014)     | 0.0001<br>(0.0004)     | 0.0001<br>(0.0017)     | 0.0001<br>(0.0014)     | -0.0003<br>(0.0004)    | -0.0003<br>(0.0017)    | -0.0003<br>(0.0013)    |
| Male                            | 0.0100***<br>(0.0018)  | 0.0100***<br>(0.0025)  | 0.0100***<br>(0.0022)  | 0.0090***<br>(0.0018)  | 0.0090***<br>(0.0024)  | 0.0090***<br>(0.0022)  | 0.0065***<br>(0.0018)  | 0.0065***<br>(0.0023)  | 0.0065***<br>(0.0021)  |
| Age                             | 0.0002<br>(0.0003)     | 0.0002<br>(0.0003)     | 0.0002<br>(0.0003)     | 0.0002<br>(0.0003)     | 0.0002<br>(0.0003)     | 0.0002<br>(0.0003)     | 0.0003<br>(0.0003)     | 0.0003<br>(0.0003)     | 0.0003<br>(0.0003)     |
| Age^2                           | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) |
| Socio-economic status: high     |                        |                        |                        | -0.0473***<br>(0.0035) | -0.0473***<br>(0.0046) | -0.0473***<br>(0.0042) | -0.0316***<br>(0.0035) | -0.0316***<br>(0.0045) | -0.0316***<br>(0.0041) |
| Socio-economic status: middle   |                        |                        |                        | -0.0833***<br>(0.0035) | -0.0833***<br>(0.0057) | -0.0833***<br>(0.0050) | -0.0471***<br>(0.0036) | -0.0471***<br>(0.0052) | -0.0471***<br>(0.0046) |
| Socio-economic status: low      |                        |                        |                        | -0.1128***<br>(0.0040) | -0.1128***<br>(0.0063) | -0.1128***<br>(0.0059) | -0.0563***<br>(0.0042) | -0.0563***<br>(0.0058) | -0.0563***<br>(0.0054) |
| Socio-economic status: very low |                        |                        |                        | -0.1249***<br>(0.0061) | -0.1249***<br>(0.0098) | -0.1249***<br>(0.0087) | -0.0572***<br>(0.0063) | -0.0572***<br>(0.0090) | -0.0572***<br>(0.0083) |
| Education                       |                        |                        |                        |                        |                        |                        | 0.0103***<br>(0.0002)  | 0.0103***<br>(0.0004)  | 0.0103***<br>(0.0004)  |
| Observations                    | 281,283                | 281,283                | 281,283                | 281,084                | 281,084                | 281,084                | 279,293                | 279,293                | 279,293                |
| R-squared                       | 0.0330                 | 0.0330                 | 0.0330                 | 0.0370                 | 0.0370                 | 0.0370                 | 0.0441                 | 0.0441                 | 0.0441                 |
| Country dummies                 | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Year dummies                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors                 | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Crime victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a crime during the last twelve months, and 0 otherwise (source: Latinobarómetro). The Latinobarómetro survey was not performed in 1999, 2012 and 2014. The crime victimization question was not included in the 2000 Latinobarómetro survey. **Gini index** defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Male** is a dummy variable that equals one if the respondent is a man, zero otherwise. **Age** is the age of the respondent. **Socio-economic status** are dummy variables for the socio-economic status of the household determined by the interviewer (the highest socio-economic status is excluded). **Education** are the years of education of the respondent. 18 countries are included. All regressions include year and country dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 4 and 7. Standard errors clustered at the region (subnational) level in columns 2, 5 and 8. Standard errors clustered at the city level in columns 3, 6 and 9. \*\*\* p < .01 \*\* p < .05 \* p < .1.

In Table 11, we explore differences in crime victimization by ethnicity. The Latinobarómetro survey considers seven self-declared ethnic groups: White, Mulatto, Mestizo, Indigenous, Black, Asian, and Other. Leaving the residual category as the baseline group, the first three columns of Table 11 suggest that the crime victimization of the Asian group, together with the White group, are highest. However, these differences disappear once we control for socio-economic status in columns 4 to 6. Instead, when we control for respondent's educational level in columns 7 to 9, the Mestizo and Mulatto groups show somewhat higher victimization levels.<sup>33</sup>

<sup>33</sup> Jaitman and Torre (2017) report higher homicide victimization among Afro-descendants in Brazil and in Trinidad and Tobago.

**Table 11.** Victimization Rate, Inequality and Ethnicity, Latin American and Caribbean Countries, 2007–2018

| Variables                       | Crime victimization    |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                 | (1)                    | (2)                    | (3)                    | (4)                    | (5)                    | (6)                    | (7)                    | (8)                    | (9)                    |
| Gini index                      | 0.0082***<br>(0.0012)  | 0.0082**<br>(0.0041)   | 0.0082**<br>(0.0035)   | 0.0085***<br>(0.0012)  | 0.0085**<br>(0.0039)   | 0.0085**<br>(0.0034)   | 0.0075***<br>(0.0012)  | 0.0075*<br>(0.0039)    | 0.0075**<br>(0.0034)   |
| GDP variation                   | -0.3490***<br>(0.0705) | -0.3490<br>(0.2204)    | -0.3490**<br>(0.1727)  | -0.3505***<br>(0.0704) | -0.3505<br>(0.2159)    | -0.3505**<br>(0.1703)  | -0.3467***<br>(0.0702) | -0.3467<br>(0.2148)    | -0.3467**<br>(0.1697)  |
| Primary completion rate         | -0.0015***<br>(0.0004) | -0.0015<br>(0.0012)    | -0.0015*<br>(0.0009)   | -0.0016***<br>(0.0004) | -0.0016<br>(0.0013)    | -0.0016*<br>(0.0009)   | -0.0016***<br>(0.0004) | -0.0016<br>(0.0012)    | -0.0016*<br>(0.0009)   |
| Poverty ratio at \$1.90 a day   | 0.0017<br>(0.0013)     | 0.0017<br>(0.0043)     | 0.0017<br>(0.0039)     | 0.0023*<br>(0.0013)    | 0.0023<br>(0.0041)     | 0.0023<br>(0.0038)     | 0.0034***<br>(0.0013)  | 0.0034<br>(0.0040)     | 0.0034<br>(0.0037)     |
| Male                            | 0.0128***<br>(0.0025)  | 0.0128***<br>(0.0028)  | 0.0128***<br>(0.0027)  | 0.0115***<br>(0.0025)  | 0.0115***<br>(0.0028)  | 0.0115***<br>(0.0027)  | 0.0095***<br>(0.0025)  | 0.0095***<br>(0.0027)  | 0.0095***<br>(0.0026)  |
| Age                             | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     | 0.0002<br>(0.0004)     |
| Age^2                           | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) | -0.0000***<br>(0.0000) |
| Ethnicity: Asian                | 0.0338*<br>(0.0179)    | 0.0338*<br>(0.0190)    | 0.0338*<br>(0.0182)    | 0.0252<br>(0.0178)     | 0.0252<br>(0.0190)     | 0.0252<br>(0.0182)     | 0.0273<br>(0.0179)     | 0.0273<br>(0.0191)     | 0.0273<br>(0.0182)     |
| Ethnicity: black                | 0.0040<br>(0.0100)     | 0.0040<br>(0.0132)     | 0.0040<br>(0.0119)     | 0.0065<br>(0.0100)     | 0.0065<br>(0.0132)     | 0.0065<br>(0.0119)     | 0.0092<br>(0.0100)     | 0.0092<br>(0.0131)     | 0.0092<br>(0.0118)     |
| Ethnicity: indigenous           | -0.0102<br>(0.0098)    | -0.0102<br>(0.0136)    | -0.0102<br>(0.0127)    | -0.0046<br>(0.0098)    | -0.0046<br>(0.0136)    | -0.0046<br>(0.0128)    | 0.0065<br>(0.0098)     | 0.0065<br>(0.0134)     | 0.0065<br>(0.0126)     |
| Ethnicity: mestizo              | 0.0215**<br>(0.0088)   | 0.0215*<br>(0.0112)    | 0.0215**<br>(0.0108)   | 0.0181**<br>(0.0088)   | 0.0181<br>(0.0113)     | 0.0181*<br>(0.0109)    | 0.0167*<br>(0.0088)    | 0.0167<br>(0.0113)     | 0.0167<br>(0.0109)     |
| Ethnicity: mulatto              | 0.0138<br>(0.0101)     | 0.0138<br>(0.0122)     | 0.0138<br>(0.0117)     | 0.0143<br>(0.0101)     | 0.0143<br>(0.0120)     | 0.0143<br>(0.0118)     | 0.0172*<br>(0.0100)    | 0.0172<br>(0.0119)     | 0.0172<br>(0.0117)     |
| Ethnicity: white                | 0.0025<br>(0.0089)     | 0.0025<br>(0.0112)     | 0.0025<br>(0.0105)     | -0.0048<br>(0.0089)    | -0.0048<br>(0.0113)    | -0.0048<br>(0.0106)    | -0.0051<br>(0.0088)    | -0.0051<br>(0.0112)    | -0.0051<br>(0.0106)    |
| Socio-economic status: high     |                        |                        |                        | -0.0441***<br>(0.0048) | -0.0441***<br>(0.0063) | -0.0441***<br>(0.0056) | -0.0297***<br>(0.0048) | -0.0297***<br>(0.0065) | -0.0297***<br>(0.0057) |
| Socio-economic status: middle   |                        |                        |                        | -0.0807***<br>(0.0048) | -0.0807***<br>(0.0076) | -0.0807***<br>(0.0067) | -0.0472***<br>(0.0049) | -0.0472***<br>(0.0074) | -0.0472***<br>(0.0063) |
| Socio-economic status: low      |                        |                        |                        | -0.1133***<br>(0.0058) | -0.1133***<br>(0.0085) | -0.1133***<br>(0.0077) | -0.0609***<br>(0.0060) | -0.0609***<br>(0.0083) | -0.0609***<br>(0.0074) |
| Socio-economic status: very low |                        |                        |                        | -0.1254***<br>(0.0098) | -0.1254***<br>(0.0134) | -0.1254***<br>(0.0127) | -0.0617***<br>(0.0100) | -0.0617***<br>(0.0134) | -0.0617***<br>(0.0127) |
| Education                       |                        |                        |                        |                        |                        |                        | 0.0098***<br>(0.0003)  | 0.0098***<br>(0.0005)  | 0.0098***<br>(0.0005)  |
| Observations                    | 137,587                | 137,587                | 137,587                | 137,587                | 137,587                | 137,587                | 137,587                | 137,587                | 137,587                |
| R-squared                       | 0.0337                 | 0.0337                 | 0.0337                 | 0.0377                 | 0.0377                 | 0.0377                 | 0.0443                 | 0.0443                 | 0.0443                 |
| Country dummies                 | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Year dummies                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors                 | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Crime victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a crime during the last twelve months, and 0 otherwise (source: Latinobarómetro). The Latinobarómetro survey was not performed in 2012 and 2014. **Gini index** is defined from 0 to 100 (source: World Bank). **GDP** variation per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Male** is a dummy variable that equals one if the respondent was a man, zero otherwise. **Age** is the age of the respondent. **Ethnicity** are dummy variables indicating the self-declared ethnicity of the respondent. **Socio-economic status** are dummies variables defining the socio-economic status of the household determined by the interviewer (the highest socio-economic status is excluded). **Education** are the years of education of the respondent. 16 countries are included. All regressions include year and country dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 4 and 7. Standard errors clustered at the region (subnational) level in columns 2, 5 and 8. Standard errors clustered at the city level in columns 3, 6 and 9. \*\*\* p < .01 \*\* p < .05 \* p < .1.

For the 2000 and 2010 waves, the Latinobarómetro survey included additional questions about the type of crime suffered by the interviewed households. In Table 12, we consider the two main types of crime: homicides and robbery/theft/larceny.<sup>34</sup> As there are only two years, we use country-year dummies. The comparison by socio-economic stratum is striking. The higher socio-economic groups report that they have suffered more robberies, thefts, and larceny, but the lower socio-economic households suffer more homicides. This is consistent with previous studies. On Colombia, Gaviria and Vélez (2002) find kidnappings concentrated on the rich, and homicides on the poor. On Brazil, Soares (2006) presents evidence that homicides are concentrated among the lower socio-economic strata.

**Table 12.** Type of Crime and Socio-economic Status, Latin American and Caribbean Countries, 2000 and 2010

| Variables                       | Homicide victimization |                       |                       | Robbery/theft/larceny victimization |                        |                        |
|---------------------------------|------------------------|-----------------------|-----------------------|-------------------------------------|------------------------|------------------------|
|                                 | (1)                    | (2)                   | (3)                   | (4)                                 | (5)                    | (6)                    |
| Socio-economic status: high     | 0.0031*<br>(0.0018)    | 0.0031<br>(0.0021)    | 0.0031<br>(0.0020)    | -0.0140<br>(0.0095)                 | -0.0140<br>(0.0111)    | -0.0140<br>(0.0104)    |
| Socio-economic status: middle   | 0.0034**<br>(0.0017)   | 0.0034<br>(0.0021)    | 0.0034*<br>(0.0019)   | -0.0443***<br>(0.0093)              | -0.0443***<br>(0.0130) | -0.0443***<br>(0.0118) |
| Socio-economic status: low      | 0.0075***<br>(0.0022)  | 0.0075***<br>(0.0029) | 0.0075***<br>(0.0028) | -0.0746***<br>(0.0105)              | -0.0746***<br>(0.0141) | -0.0746***<br>(0.0136) |
| Socio-economic status: very low | 0.0138***<br>(0.0045)  | 0.0138***<br>(0.0045) | 0.0138***<br>(0.0041) | -0.0567***<br>(0.0157)              | -0.0567**<br>(0.0222)  | -0.0567***<br>(0.0214) |
| Male                            | -0.0019*<br>(0.0010)   | -0.0019*<br>(0.0010)  | -0.0019*<br>(0.0010)  | 0.0064<br>(0.0046)                  | 0.0064<br>(0.0047)     | 0.0064<br>(0.0050)     |
| Age                             | -0.0000<br>(0.0002)    | -0.0000<br>(0.0001)   | -0.0000<br>(0.0001)   | -0.0002<br>(0.0007)                 | -0.0002<br>(0.0008)    | -0.0002<br>(0.0008)    |
| Age^2                           | -0.0000<br>(0.0000)    | -0.0000<br>(0.0000)   | -0.0000<br>(0.0000)   | -0.0000**<br>(0.0000)               | -0.0000*<br>(0.0000)   | -0.0000*<br>(0.0000)   |
| Observations                    | 37,717                 | 37,717                | 37,717                | 37,717                              | 37,717                 | 37,717                 |
| R-squared                       | 0.0098                 | 0.0098                | 0.0098                | 0.0429                              | 0.0429                 | 0.0429                 |
| Country-year dummies            | YES                    | YES                   | YES                   | YES                                 | YES                    | YES                    |
| Standard errors                 | Robust                 | Region cluster        | City cluster          | Robust                              | Region cluster         | City cluster           |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Homicide victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of a homicide during the last twelve months, and 0 otherwise. The dependent variable **Robbery/Theft/Larceny victimization** is a dummy which takes the value 1 if the respondent indicates that at least one of the family members has been the victim of robbery, theft or larceny during the last twelve months, and 0 otherwise (source: Latinobarómetro). **Socio-economic status** are dummies variables defining the socio-economic status of the respondent which is determined by the respondent (the highest socio-economic status is excluded). **Male** is a dummy variable that equals one if the interviewer was a man, zero otherwise. **Age** is the age of the respondent. 18 countries are included. All regressions include country-year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1 and 4. Standard errors clustered at the region (subnational) level in columns 2 and 5. Standard errors clustered at the city level in columns 3 and 6. \*\*\* p < .01 \*\* p < .05 \* p < .1.

In Table 13, we consider a different dependent variable from the Latinobarómetro questionnaire: concern about becoming a victim of a violent crime.<sup>35</sup> The first three columns show a

<sup>34</sup> The crime classifications differed between these two Latinobarómetro waves. We group robbery, theft, and larceny to allow comparability. Regarding homicides, the gender dummy refers to the respondent, not the victim.

<sup>35</sup> The questionnaire asks: "How often are you concerned about becoming a victim of a violent crime?" The four possible answers are all or almost all the time, sometimes, occasionally, and never. We treat these four answers cardinally, but the results are similar if they are treated ordinally.

positive relationship between country inequality and concern about becoming a victim of a crime. Fear of crime falls with economic activity. Moreover, although we find that men suffer more crime, they are less concerned. The quadratic age effect indicates that concern about crime peaks at age 60. As happened with crime victimization, the concern about crime falls among lower socio-economic strata (columns 4 to 6) and increases with educational attainment (columns 7 to 9).

**Table 13.** Concern about Crime Victimization and Inequality, Latin American and Caribbean Countries, 2007–2018

| Variables                       | Concern about becoming a victim of a violent crime |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                 | (1)  | (2)                    | (3)                    | (4)                    | (5)                    | (6)                    | (7)                    | (8)                    | (9)                    |
| Gini index                      | 0.0066**<br>(0.0026)                               | 0.0066<br>(0.0095)     | 0.0066<br>(0.0062)     | 0.0071***<br>(0.0026)  | 0.0071<br>(0.0094)     | 0.0071<br>(0.0061)     | 0.0054**<br>(0.0026)   | 0.0054<br>(0.0093)     | 0.0054<br>(0.0061)     |
| GDP variation                   | -0.5464***<br>(0.1478)                             | -0.5464<br>(0.4676)    | -0.5464<br>(0.3576)    | -0.5789***<br>(0.1478) | -0.5789<br>(0.4620)    | -0.5789<br>(0.3569)    | -0.5897***<br>(0.1475) | -0.5897<br>(0.4580)    | -0.5897*<br>(0.3572)   |
| Primary completion rate         | -0.0012<br>(0.0009)                                | -0.0012<br>(0.0029)    | -0.0012<br>(0.0020)    | -0.0012<br>(0.0009)    | -0.0012<br>(0.0029)    | -0.0012<br>(0.0020)    | -0.0012<br>(0.0009)    | -0.0012<br>(0.0029)    | -0.0012<br>(0.0020)    |
| Poverty ratio at \$1.90 a day   | -0.0003<br>(0.0029)                                | -0.0003<br>(0.0106)    | -0.0003<br>(0.0077)    | 0.0003<br>(0.0029)     | 0.0003<br>(0.0105)     | 0.0003<br>(0.0076)     | 0.0019<br>(0.0029)     | 0.0019<br>(0.0104)     | 0.0019<br>(0.0075)     |
| Male                            | -0.0941***<br>(0.0054)                             | -0.0941***<br>(0.0105) | -0.0941***<br>(0.0089) | -0.0964***<br>(0.0054) | -0.0964***<br>(0.0103) | -0.0964***<br>(0.0087) | -0.0997***<br>(0.0054) | -0.0997***<br>(0.0100) | -0.0997***<br>(0.0085) |
| Age                             | 0.0121***<br>(0.0009)                              | 0.0121***<br>(0.0010)  | 0.0121***<br>(0.0011)  | 0.0121***<br>(0.0009)  | 0.0121***<br>(0.0010)  | 0.0121***<br>(0.0011)  | 0.0121***<br>(0.0009)  | 0.0121***<br>(0.0010)  | 0.0121***<br>(0.0011)  |
| Age^2                           | -0.0001***<br>(0.0000)                             | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) | -0.0001***<br>(0.0000) |
| Socio-economic status: high     |  |                        |                        | -0.0259**<br>(0.0101)  | -0.0259*<br>(0.0156)   | -0.0259**<br>(0.0109)  | -0.0028<br>(0.0101)    | -0.0028<br>(0.0157)    | -0.0028<br>(0.0110)    |
| Socio-economic status: middle   |  |                        |                        | -0.0746***<br>(0.0101) | -0.0746***<br>(0.0172) | -0.0746***<br>(0.0126) | -0.0214**<br>(0.0104)  | -0.0214<br>(0.0170)    | -0.0214*<br>(0.0122)   |
| Socio-economic status: low      |  |                        |                        | -0.1387***<br>(0.0125) | -0.1387***<br>(0.0207) | -0.1387***<br>(0.0176) | -0.0551***<br>(0.0131) | -0.0551***<br>(0.0204) | -0.0551***<br>(0.0169) |
| Socio-economic status: very low |  |                        |                        | -0.1903***<br>(0.0227) | -0.1903***<br>(0.0350) | -0.1903***<br>(0.0300) | -0.0877***<br>(0.0231) | -0.0877***<br>(0.0342) | -0.0877***<br>(0.0296) |
| Education                       |  |                        |                        |                        |                        |                        | 0.0154***<br>(0.0007)  | 0.0154***<br>(0.0013)  | 0.0154***<br>(0.0011)  |
| Observations                    | 134,218  | 134,218                | 134,218                | 134,218                | 134,218                | 134,218                | 134,218                | 134,218                | 134,218                |
| R-squared                       | 0.0304   | 0.0304                 | 0.0304                 | 0.0322                 | 0.0322                 | 0.0322                 | 0.0358                 | 0.0358                 | 0.0358                 |
| Country dummies                 | YES  | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Year dummies                    | YES  | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    | YES                    |
| Standard errors                 | Robust   | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           | Robust                 | Region cluster         | City cluster           |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the **concern about being a victim of a violent crime** which can take four values: 1 (never), 2 (occasionally), 3 (sometimes) and 4 (all or almost all the time) (source: Latinobarómetro). The Latinobarómetro survey was not performed in 2012 and 2014. The concern about being a victim of a violent crime question was not included in the 2008 Latinobarómetro survey. **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Male** is a dummy variable that equals one if the respondent was a man, zero otherwise. **Age** is the age of the respondent. **Socio-economic status** are dummies defining the socio-economic status of the respondent which is determined by the interviewer (the highest socio-economic status is excluded). **Education** are the years of education of the respondent. 16 countries are included. All regressions include year and country dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 4 and 7. Standard errors clustered at the region (subnational) level in columns 2, 5 and 8. Standard errors clustered at the city level in columns 3, 6 and 9. \*\*\* p < .01 \*\* p < .05 \* p < .1.

In summary, our analysis of the distribution of crime victimization across population groups suggests several interesting results. Both male and female homicides increase with inequality, but male elasticity is higher. Moreover, the share of male homicides is worldwide higher than the share of female homicides, but the ratio is three times larger in LAC countries. According to crime victimization surveys, young males suffer the main burden of crime. By socio-economic stratum, the higher-income (and more educated) groups suffer, in general, more victimization than poorer groups in LAC countries, although this is not the case on other continents. The analysis by type of crime shows that affluent Latin Americans suffer more robberies, but homicides in the region are concentrated among the poor.

## 6. Using Historical Data to Instrument for Inequality

A main challenge to a causal interpretation of our estimates of the relationship between inequality and crime is that common political and institutional factors, such as weak law enforcement and institutional failures, can affect inequality and crime levels simultaneously. For example, elites may limit the access of lower socio-economic groups to economic opportunities, while weakening tax collection and the financing of state capacities to fight crime. Similarly, institutional biases in the allocation of public resources may reproduce inequity by hampering equality of opportunity in the access to education, health care and other public services, while concentrating police and judicial protection in favour of the upper strata to the disadvantage of other groups in society. Although it is extremely difficult to measure and control for these factors in a cross-country study, as these factors are, by and large, time-invariant, our main estimation strategy has been to include fixed effects in our regressions.

A second challenge is direct reverse causality. Property crime can itself be redistributive if criminals are poorer than victims. This would not represent a serious identification challenge because this pecuniary redistribution would tend to reduce the possibility of finding an association between inequality and crime. However, our estimated Gini indexes are based on declared family income and thus are not likely to incorporate income from illegal sources. Endogeneity would tend, instead, to inflate estimates if crime can reproduce inequality. Local evidence from extremely violent environments in Colombia and Mexico shows that drug trafficking, extortionate kidnappings, and the violent resolution of conflicts between criminal organizations can affect investment, employment and business performance (Pshisva and Suarez 2010; Robles, Calderón, and Magaloni 2013; Utar 2018; Navajas-Ahumada 2020). Crime may also impose additional costs on private sector operations through extra security expenditures and losses through theft (Sutton 2017). The local focus of these studies highlights the relative advantage for identifying these effects using microdata. But it may also underline that it is unlikely that crime is sufficiently pervasive to affect inequality at the macro level.

So far, our strategy to alleviate endogeneity concerns has been the inclusion of country (or similar) fixed effects and the combination of macro inequality variables with micro victimization survey data. New institutional theories link current inequality levels to historical conditions (Engerman and Sokoloff 1997; Acemoglu, Garcia-Jimeno, and Robinson 2012; Soares, Assunção, and Goulart 2012). As a further analysis, we apply these theories to instrument for inequality in 2SLS regressions. In particular, we follow the identification strategy of Buonanno and Vargas (2019), who use Colombian municipality-level slavery data from the 19th

Century to instrument for current land inequality in crime regressions.<sup>36</sup> For this exercise, we use settler mortality and ex-colony variables from Acemoglu, Johnson, and Robinson (2001) and African and Native slavery measures from Soares, Assunção, and Goulart (2012) as our inequality instruments in cross-sectional country 2SLS regressions.

Our 2SLS regressions are presented in Table 14. Our instruments for the current Gini indexes first consider the variables of Acemoglu, Johnson, and Robinson (2001): a dummy for whether a country was a former colony, and settler mortality (deaths per 1,000 settlers per annum). Of course, all these regressions are cross-sectional because the instruments do not vary over time. The dependent variables are average country homicide rates (from the World Bank database in column 1 and from the Global Burden of Disease Study in column 2), and WVS country victimization rates (in column 3). The number of observations is somewhat reduced because the instruments are not available for all the countries in our samples.

The explanatory power of the instruments in the first-stage regressions is high. Having been a colony is a positive and significant predictor of current inequality levels. Settler mortality is not significant. The 2SLS regressions show a positive and significant effect of inequality on crime. Moreover, a comparison of the inequality coefficients in the first three columns of Table 14 to the coefficients in the first column of Tables 1, 2 and 3, respectively, shows that the estimates are extremely close and fall within the respective confidence intervals. Thus, our previous OLS estimates are similar to these 2SLS estimates.

Our next inequality instruments are the African and Native slavery measures of Soares, Assunção, and Goulart (2012). The African slavery variable is the average ratio of the number of slaves received to the local population in each 25-year interval during colonial times (only for countries that had no significant black population before the beginning of the slave trade). The Native slavery variable is the ratio of the native population in 1500 to the total population in 1850, but only for former colonies in the Americas; it is set to zero for other countries.<sup>37</sup>

In columns 4 to 6 of Table 14, the number of observations is greatly reduced because the intersections between the sample of Soares, Assunção, and Goulart (2012) and our samples are limited. Both the African and Native slavery measures seem positive and significant determinants of current inequality in these first-stage regressions. Although the significance of the second-stage coefficients is low in the homicide regressions (probably because of the low number of observations), the point estimates are quite similar to our previous OLS and 2SLS estimates. Inequality is significant in the WVS regression, but the number of observations is very small.

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<sup>36</sup> Enamorado, Lopez-Calva, Rodriguez-Castelan and Winkler (2016) also study the effect of inequality on crime using a 2SLS strategy, but instrumenting for municipality Gini indexes with the income distribution predicted by past local income distribution and national patterns of income growth in the context of the Mexican drug war.

<sup>37</sup> The word slavery is taken from Soares et al. (2012), and it encompasses various systems of forced labour of the Native American population, including the Spanish *mita*, *encomienda* and *yanaconazgo*.



Finally, we combine both sets of instruments in columns 7 to 9.<sup>38</sup> The ex-colony, settler mortality, and Native slavery variables are positive and significant predictors of current inequality. The 2SLS regressions show a positive and highly significant effect of inequality on crime. A comparison of the inequality coefficients in the last three columns of Table 14 with the coefficients in the first column of Tables 1, 2, and 3, respectively, shows that the estimates are extremely close and fall into the respective confidence intervals. The close similarity between the OLS and the 2SLS estimates is reassuring.

**Table 14.** Instrumenting Inequality with Historical Data

|                              | (1)                    | (2)                    | (3)                            | (4)                    | (5)                    | (6)                            | (7)                    | (8)                    | (9)                            |
|------------------------------|------------------------|------------------------|--------------------------------|------------------------|------------------------|--------------------------------|------------------------|------------------------|--------------------------------|
|                              | Homicides (World Bank) | Homicides (GBDS)       | Crime victimization rate (WVS) | Homicides (World Bank) | Homicides (GBDS)       | Crime victimization rate (WVS) | Homicides (World Bank) | Homicides (GBDS)       | Crime victimization rate (WVS) |
| Second stage:                |                        |                        |                                |                        |                        |                                |                        |                        |                                |
| Gini index                   | 0.8250***<br>(0.1780)  | 0.6442***<br>(0.1681)  | 0.0143***<br>(0.0028)          | 0.5012<br>(0.5953)     | 0.4810<br>(0.5176)     | 0.0213***<br>(0.0044)          | 0.8908***<br>(0.1672)  | 0.8294***<br>(0.1587)  | 0.0167***<br>(0.0025)          |
| Adj R-squared (second stage) | 0.3477                 | 0.3260                 | 0.2662                         | 0.1213                 | 0.1482                 | 0.5218                         | 0.3494                 | 0.3702                 | 0.4341                         |
| First stage:                 |                        |                        |                                |                        |                        |                                |                        |                        |                                |
| Ex Colony                    | 12.7533***<br>(1.6202) | 11.5443***<br>(1.2843) | 11.5388***<br>(2.2113)         |                        |                        |                                | 6.7003*<br>(3.9073)    | 6.4697*<br>(3.8652)    | 7.4071<br>(8.0645)             |
| Settler Mortality            | -0.0085<br>(0.0072)    | -0.0019<br>(0.0018)    | -0.0003<br>(0.0034)            |                        |                        |                                | 0.0644**<br>(0.0308)   | 0.0698**<br>(0.0290)   | 0.0170<br>(0.0986)             |
| African Slavery              |                        |                        |                                | 0.9926**<br>(0.3978)   | 1.1914***<br>(0.3694)  | 0.6085<br>(0.6843)             | 0.4762<br>(0.4635)     | 0.4986<br>(0.4593)     | 0.2374<br>(0.8777)             |
| Native Slavery               |                        |                        |                                | 17.6937***<br>(4.3861) | 18.0628***<br>(4.3655) | 16.0475**<br>(5.3819)          | 14.9446***<br>(4.1791) | 14.9277***<br>(4.1571) | 13.7772**<br>(6.2292)          |
| Adj R-squared (first stage)  | 0.4647                 | 0.4378                 | 0.4211                         | 0.3883                 | 0.4242                 | 0.3485                         | 0.6984                 | 0.7144                 | 0.5659                         |
| Observations                 | 90                     | 107                    | 39                             | 29                     | 31                     | 14                             | 70                     | 71                     | 32                             |

Note: 2SLS instrumental variables regressions. In columns 1, 2, 4, 5, 7 and 8 the dependent variable **Homicides** is the country average of intentional homicides per 100,000 population calculated for each country using the available year observations from 1995 to 2017 (source: World Bank in columns 1, 4 and 7, and Global Burden of Disease Study in columns 2, 5 and 8). In columns 3, 6 and 9 the dependent variable **Crime victimization rate** is the percentage of families in the country in which the respondent indicates that at least one of its members has been the victim of a crime during the last twelve months (source: World Values Survey). **Gini index** is defined from 0 to 100 (source: World Bank). **Ex colony and Settler Mortality** were taken from Acemoglu, Johnson, and Robinson (2001). **Ex colony** is a dummy variable that equals one if the country was a former colony, zero otherwise. **Settler Mortality** is potential settler mortality, measured in terms of deaths per annum per 1,000 “mean strength” (raw mortality numbers are adjusted to what they would be if a force of 1,000 living people were kept in place for a whole year). **African slavery and Native slavery** were taken from Soares, Assunção, and Goulart (2012). **African slavery** is the ln of the average of the number of African slaves received for each country in each 25-year interval divided by historical populations. **Native slavery** is the country population in 1500 divided by its population in 1850. The constants are not presented. Standard errors in parentheses. \*\*\* p < .01 \*\* p < .05 \* p < .1

The historical determinants that these instrumental variables aim to capture can also affect crime through other channels besides inequality, such as weak law enforcement, ethnic fractionalization, or a culture of violence (Demombynes and Özler 2005; Gouda and Rigterink 2016), potentially weakening the validity of the exclusion restriction. To alleviate this concern,

<sup>38</sup> To combine the instruments, we follow Acemoglu, Johnson and Robinson’s methodology (2001) for the settler mortality variable by setting to zero the African and Native slavery measures of Soares, Assunção, and Goulart (2012) for non-former colonies.

we also control for current institutional and governance quality in Table A.4, including the country averages of the Worldwide Governance Indicators (WGI).<sup>39</sup> Our previous 2SLS inequality results remain unaltered if we include this proxy for institutional quality.<sup>40</sup> Overall, our 2SLS results suggest the presence of a causal effect of inequality on crime.

## 7. Conclusions

The main conclusion of this paper is that income inequality and crime show a significant and positive relationship. This result is robust to the utilization of distinct databases, the use of homicide rates or crime victimization surveys, the inclusion of countries on all continents or a focus on Latin America and the Caribbean, the consideration of different sets of controls and standard error estimates, and the measurement of inequality by applying Gini indexes at the national and subnational levels. The significant and positive results also persist if historical variables are used to instrument for inequality in crime regressions, suggesting that a causal interpretation of the estimated effect is reasonable. Moreover, inequality is the only variable showing this robust regularity. Educational attainment, economic activity, income per capita, and poverty show much weaker and unstable relationships with crime.

The analysis of the distribution of crime victimization across groups also provides interesting results. Men suffer more homicides than women, and this ratio is higher in more unequal societies, such as the LAC countries. According to victimization surveys, men suffer more crime than women, and the youth suffer more crime than the elderly. By socio-economic stratum, high-income groups generally suffer more victimization than poorer groups in LAC countries, although this is not the case on other continents. Individuals that are more educated suffer higher crime victimization. Ethnic victimization differences do not seem strong in the LAC region. Finally, the analysis by type of crime shows that affluent Latin Americans suffer more robberies, but the poor suffer more homicides.

Although the study of the relationship between inequality and crime is not a new topic, we have analyzed it using new data from a recent period. The relevance of the problem in Latin America and the current events affecting the world make this revision particularly timely. The COVID-19 pandemic is already having huge impacts on economic activity throughout the world. The recession and its differential impacts are affecting unemployment, poverty, and inequality. Although early indicators and anecdotal evidence suggest that, with fewer people and more police on the streets, lockdowns have initially reduced crime, our results warn that the coronavirus can become associated with a rebounded epidemic of crime in Latin America and the Caribbean.

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<sup>39</sup> The World Bank WGI has been measuring six dimensions of governance—voice and accountability, political stability and lack of violence, government effectiveness, regulatory quality, rule of law, and control of corruption—since 1996. We use here the 1996–2017 country averages. For details, see WGI (Worldwide Governance Indicators) (dashboard), World Bank, Washington, DC, <http://info.worldbank.org/governance/wgi/#home>.

<sup>40</sup> The results are also robust to the separate inclusion of more specific WGI components, such as political stability and lack of violence, rule of law, and control of corruption.

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## Appendixes

### Appendix A.1. Country-year observations in the World Bank homicide regressions

**Africa:** Algeria (2011), Botswana (2002, 2009), Burkina Faso (2003, 2009, 2014), Burundi (2013), Cameroon (2001, 2014), Egypt (2004, 2008, 2010, 2012), Ghana (2005, 2012, 2016), Kenya (2005, 2015), Liberia (2007), Malawi (2004, 2010), Morocco (1998, 2000, 2006, 2013), Mozambique (2002, 2008), Namibia (2009), Niger (2011), Rwanda (2010, 2013), Sierra Leone (2011), South Africa (1996, 2000, 2005, 2008, 2010, 2014), Tanzania (2011), Tunisia (2005, 2010), Uganda (1996, 2005, 2009, 2012, 2016), Zambia (1998, 2010, 2015).

**Asia:** Armenia (1996, 1999, 2001-2017), Bangladesh (2000, 2005, 2010, 2016), Bhutan (2003, 2007, 2012, 2017), China (1996, 1999, 2002, 2005, 2008, 2010-2016), India (2004, 2009, 2011), Indonesia (1998-2000, 2003, 2004, 2008-2017), Iran (2009, 2013, 2014), Israel (1997, 2001, 2005, 2007, 2010, 2012, 2014), Jordan (1997, 2006, 2008, 2010), Kazakhstan (1996, 2001-2004, 2008-2015, 2017), Kyrgyz Republic (1998, 2000-2017), Malaysia (1995, 1997, 2004, 2007, 2008, 2011, 2013), Mongolia (2007, 2010-2012, 2014, 2016), Myanmar (2015), Nepal (2003, 2010), Pakistan (1996, 1998, 2001, 2004, 2005, 2007, 2010, 2011, 2013, 2015), Philippines (2000, 2003, 2006, 2009, 2012, 2015), South Korea (2006, 2008, 2010, 2012), Sri Lanka (1995, 2006, 2009, 2012, 2016), Tajikistan (1999, 2003, 2004, 2007, 2009), Thailand (1996, 1998-2000, 2002, 2004, 2006-2016), Turkey (2004-2012), Uzbekistan (1998, 2000, 2002, 2003), Vietnam (2002, 2004, 2006, 2008, 2010).

**Latin America and the Caribbean:** Argentina (2014, 2016, 2017), Bolivia (2005-2009, 2011-2016), Brazil (1995, 1996-1999, 2001-2009, 2011-2017), Chile (2003, 2006, 2009, 2011, 2013, 2015, 2017), Colombia (1996, 1999-2005, 2008-2017), Costa Rica (1995-2017), Dominican Republic (1996, 1997, 2000-2014, 2016, 2017), Ecuador (1999, 2000, 2003-2017), El Salvador (1995, 1996, 1998-2017), Guatemala (2000, 2006, 2014), Guyana (1998), Haiti (2012), Honduras (1995, 1999, 2001-2017), Jamaica (1996, 1999, 2002, 2004), Mexico (1996, 1998, 2000, 2002, 2004-2006, 2008, 2010, 2012, 2014, 2016), Nicaragua (1998, 2001, 2005, 2009, 2014), Panama (1995, 1997-2017), Paraguay (2001-2016), Peru (2011-2017), Uruguay (1995-1998, 2000-2017), Venezuela (1995, 1998, 1999, 2001-2006).

**Oceania:** Papua New Guinea (2009).

**North America:** Canada (1997, 1998, 2000, 2004, 2007, 2010, 2013), United States (1997, 2000, 2004, 2007, 2010, 2013, 2016).

**Eastern Europe:** Albania (1996, 2002, 2005, 2008, 2012, 2014-2017), Azerbaijan (1995, 2001-2005), Belarus (1995, 1998-2014), Bulgaria (1995, 1997, 2001, 2003, 2006-2017), Croatia (1998-2001, 2004, 2008-2017), Cyprus (2004-2017), Czech Republic (1996, 2002, 2004-2017), Estonia (1995, 1998, 2000-2017), Georgia (1996-2010, 2014, 2016), Hungary (1998-2017), Latvia (1995-1998, 2002-2017), Lithuania (1996, 1998-2017), Moldova (1997-2014), Montenegro (2005-2015), North Macedonia (1998, 2000, 2002-2006, 2008-2017), Poland (1995, 1996, 1998-2017), Romania (1995, 1997-2017), Russia (1996-2009, 2012-2017), Serbia (2002-2010, 2012-2017), Slovenia (1997-1999, 2002-2017), Ukraine (1995, 1996, 1999, 2002-2010, 2012, 2014, 2017).

**Western Europe:** Austria (1995, 1997, 2000, 2003-2016), Belgium (1995, 1997, 2000, 2003-2017), Denmark (1995, 2000, 2003-2017), Finland (1995, 2000, 2003-2017), France (2000,

2003-2017), Germany (1995, 1998, 2000-2011, 2013, 2015, 2016), Greece (1995, 2003-2017), Iceland (2003-2015), Ireland (1995, 1996, 2000, 2003-2016), Italy (1995, 1998, 2000, 2003-2016), Luxembourg (1997, 2000, 2003-2017), Norway (1995, 2000, 2003-2017), Spain (1995, 2000, 2003-2017), Sweden (1995, 2000, 2003-2017), Switzerland (2000, 2002, 2006-2017), United Kingdom (1995, 1999, 2004-2016).

## Appendix A.2. Country-year observations in the Global Burden of Disease Study homicide regressions

**Africa:** Algeria (1995, 2011), Angola (2000, 2008), Benin (2003, 2011, 2015), Botswana (2002, 2009, 2015), Burkina Faso (1998, 2003, 2009, 2014), Burundi (1998, 2006, 2013), Cameroon (1996, 2000, 2001, 2007, 2014), Chad (2003, 2011), Central African Republic (2003, 2008), Djibouti (2012, 2013, 2017), Egypt (1995, 1999, 2004, 2008, 2010, 2012, 2015, 2017), Ethiopia (1995, 1999, 2004, 2010, 2015), Gabon (2005, 2017) Ghana (1998, 2005, 2012, 2016), Guinea (2002, 2007, 2012), Guinea-Bissau (2002, 2010), Kenya (1997, 2005, 2015), Liberia (2007, 2014, 2016), Madagascar (1997, 1999, 2001, 2005, 2010, 2012), Malawi (1997, 2004, 2010, 2016), Mali (2001, 2006, 2009), Mauritania (1995, 2000, 2004, 2008, 2014), Morocco (1998, 2000, 2006, 2013), Mozambique (1996, 2002, 2008, 2014), Namibia (2003, 2009, 2015), Niger (2005, 2007, 2011, 2014), Nigeria (1996, 2003, 2009), Rwanda (2000, 2005, 2010, 2013, 2016), Senegal (2001, 2005, 2011), Sierra Leone (2003, 2011), Sudan (2009, 2014), South Africa (1996, 2000, 2005, 2008, 2010, 2014), Tanzania (2000, 2007, 2011, 2017), Togo (2006, 2011, 2015), Tunisia (1995, 2000, 2005, 2010, 2015), Uganda (1996, 1999, 2002, 2005, 2009, 2012), Zambia (1996, 1998, 2002, 2004, 2006, 2010, 2011, 2015, 2017), Zimbabwe (2011, 2017).

**Asia:** Armenia (1996, 1999, 2001-2017), Bangladesh (1995, 2000, 2005, 2010, 2016), Bhutan (2003, 2007, 2012, 2017), China (1996, 1999, 2002, 2005, 2008, 2010-2016), India (2004, 2009, 2011), Indonesia (1996, 1998-2017), Iran (1998, 2005, 2006, 2009, 2013-2017), Israel (1997, 2001, 2005, 2007, 2010, 2012, 2014, 2016), Jordan (1997, 2002, 2006, 2008, 2010), Kazakhstan (1996, 2001-2017), Malaysia (1995, 1997, 2004, 2007, 2008, 2011, 2013, 2015), Mongolia (1995, 1998, 2002, 2007, 2010-2012, 2014, 2016), Myanmar (2015, 2017), Nepal (1995, 2003, 2010), Pakistan (1996, 1998, 2001, 2004, 2005, 2007, 2010, 2011, 2013, 2015), Philippines (1997, 2000, 2003, 2006, 2009, 2012, 2015), South Korea (2006, 2008, 2010, 2012), Sri Lanka (1995, 2002, 2006, 2009, 2012, 2016), Tajikistan (1999, 2003, 2004, 2007, 2009, 2015), Thailand (1996, 1998-2000, 2002, 2004, 2006-2017), Turkey (2004-2017), Uzbekistan (1998, 2000, 2002, 2003), Vietnam (1998, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016).

**Latin America and the Caribbean:** Argentina (1995-2017), Belize (1995-1999), Bolivia (1997, 1999-2002, 2004-2009, 2011-2017), Brazil (1995-1999, 2001-2009, 2011-2017), Chile (1996, 1998, 2000, 2003, 2006, 2009, 2011, 2013, 2015, 2017), Colombia (1996, 1999-2005, 2008-2017), Costa Rica (1995-2017), Dominican Republic (1996, 1997, 2000-2017), Ecuador (1999, 2000, 2003-2017), El Salvador (1995, 1996, 1998-2017), Guatemala (2000, 2006, 2014), Guyana (1998), Haiti (2001, 2012), Honduras (1995-1999, 2001-2017), Jamaica (1996, 1999, 2002, 2004), Mexico (1996, 1998, 2000, 2002, 2004-2006, 2008, 2010, 2012, 2014, 2016), Nicaragua (1998, 2001, 2005, 2009, 2014), Panama (1995, 1997-2017), Paraguay (1995, 1997, 1999, 2001-2017), Peru (1997-2017), Suriname (1999), Uruguay (1995-1998, 2000-2017), Venezuela (1995, 1998, 1999, 2001-2006).

**Oceania:** Papua New Guinea (1996, 2009).

**North America:** Canada (1997, 1998, 2000, 2004, 2007, 2010, 2013), United States (1997,

2000, 2004, 2007, 2010, 2013, 2016).

**Eastern Europe:** Albania (1996, 2002, 2005, 2008, 2012, 2014-2017), Azerbaijan (1995, 2001-2005), Belarus (1995, 1998-2017), Bulgaria (1995, 1997, 2001, 2003, 2006-2017), Croatia (1998-2001, 2004, 2008-2017), Cyprus (2004-2017), Czech Republic (1996, 2002, 2004-2017), Estonia (1995, 1998, 2000-2017), Georgia (1996-2017), Hungary (1998-2017), Latvia (1995-1998, 2002-2017), Lithuania (1996, 1998-2017), Moldova (1997-2017), Montenegro (2005-2015), Poland (1995, 1996, 1998-2017), Romania (1995, 1997-2017), Russia (1996-2017), Serbia (2002-2010, 2012-2017), Slovenia (1997-1999, 2002-2017), Ukraine (1995, 1996, 1999, 2002-2017).

**Western Europe:** Austria (1995, 1997, 2000, 2003-2017), Belgium (1995, 1997, 2000, 2003-2017), Denmark (1995, 2000, 2003-2017), Finland (2000, 2003-2017), France (2000, 2003-2017), Germany (1995, 1998, 2000-2011, 2013, 2015, 2016), Greece (1995, 2000, 2003-2017), Iceland (2003-2015), Ireland (1995, 1996, 2000, 2003-2016), Italy (1995, 1998, 2000, 2003-2017), Luxembourg (1997, 2000, 2003-2017), Norway (1995, 2000, 2003-2017), Spain (1995, 2000, 2003-2017), Sweden (1995, 2000, 2003-2017), Switzerland (2000, 2002, 2006-2017), United Kingdom (1995, 1999, 2004-2016).

### Appendix A.3. Country-year observations in the World Values Surveys (WVS) regressions

**Africa:** Egypt (2013), Ghana (2012), Morocco (2011), Nigeria (2011), Rwanda (2012), South Africa (2013), Tunisia (2013).

**Asia:** Armenia (2011), China (2012), India (2014), Jordan (2014), Kazakhstan (2011), Malaysia (2012), Pakistan (2012), Philippines (2012), South Korea (2010), Thailand (2013), Turkey (2011), Uzbekistan (2011).

**Latin America and the Caribbean:** Argentina (2013), Brazil (2014), Chile (2011), Colombia (2012), Ecuador (2013), Mexico (2012), Peru (2012), Trinidad and Tobago (2011), Uruguay (2011).

**North America:** United States (2011).

**Western Europe:** Germany (2013), Spain (2011), Sweden (2011).

**Eastern Europe:** Azerbaijan (2011), Belarus (2011), Cyprus (2011), Estonia (2011), Georgia (2014), Poland (2012), Romania (2012), Russia (2011), Slovenia (2011), Ukraine (2011).

### Appendix A.4. Country-year observations in the Latinobarómetro crime victimization database

Argentina (1995-1998, 2001-2011, 2013, 2016-2018), Bolivia (1996-1998, 2001-2011, 2013, 2015-2018), Brazil (1997, 2001-2002, 2004-2009, 2011, 2013, 2015-2018), Chile (1996, 1998, 2003, 2006, 2009, 2011, 2013, 2015, 2017), Colombia (1996, 2001-2005, 2008-2011, 2013, 2015-2018), Costa Rica (1996-1998, 2001-2011, 2013, 2015-2018), Dominican Republic (2004-2011, 2013, 2015-2018), Ecuador (2003-2011, 2013, 2015-2018), El Salvador (1996, 1998, 2001-2011, 2013, 2015-2018), Guatemala (2006), Honduras (1996-1998, 2001-2011, 2013, 2015-2018), Mexico (1996, 1998, 2002, 2004-2006, 2008, 2010, 2016, 2018), Nicaragua (1998, 2001, 2005, 2009), Panama (1997-1998, 2001-2011, 2013, 2015-2018), Paraguay (1995, 1997, 2001-



2011, 2013, 2015-2018), Peru (1997-1998, 2001-2011, 2013, 2015-2018), Uruguay (1995-1998, 2001-2011, 2013, 2015-2018), Venezuela (1995, 1998, 2001-2006).

### Appendix A.5. Country-year observations in the World Bank gender homicide regressions

**Africa:** Burundi (2013), Cameroon (2014), Egypt (2004, 2010, 2012), Kenya (2015), Morocco (2013), South Africa (2008, 2010), Tanzania (2011), Uganda (2012, 2016).

**Asia:** Armenia (1996, 1999, 2001-2017), Bhutan (2017), India (2004, 2009, 2011), Iran (2013, 2014), Israel (2001, 2005, 2007, 2010, 2012, 2014), Jordan (2008, 2010), Kazakhstan (2008-2015, 2017), Kyrgyz Republic (2000-2009), Mongolia (2007, 2010-2012, 2014, 2016), Myanmar (2015), Philippines (2009, 2012), South Korea (2012), Sri Lanka (2009, 2012, 2016), Tajikistan (2007, 2009), Thailand (1996, 1998-2000, 2002, 2004, 2006-2014), Turkey (2004-2012).

**Latin America and the Caribbean:** Argentina (2014, 2017), Bolivia (2008, 2015, 2016), Brazil (1995, 1996-1999, 2001-2009, 2011-2017), Chile (2006, 2009, 2011, 2013, 2015, 2017), Colombia (1996, 1999-2005, 2008-2017), Costa Rica (1995-2017), Dominican Republic (2005-2012, 2014, 2016, 2017), Ecuador (2000, 2003-2017), El Salvador (2005-2017), Guatemala (2006, 20014), Honduras (2006-2017), Mexico (1996, 1998, 2000, 2002, 2004-2006, 2008, 2010, 2012, 2014, 2016), Nicaragua (2009), Panama (1997-2017), Paraguay (2007-2015), Peru (2011-2017), Uruguay (2006-2017), Venezuela (1998, 1999, 2001-2006).

**North America:** Canada (1997, 1998, 2000, 2004, 2007, 2010, 2013), United States (1997, 2000, 2004, 2007, 2010, 2013, 2016).

**Eastern Europe:** Albania (1996, 2002, 2005, 2008, 2012, 2014-2017), Belarus (2007-2014), Bulgaria (1995, 1997, 2001, 2003, 2006-2017), Croatia (1998-2001, 2004, 2008-2017), Cyprus (2004-2017), Czech Republic (1996, 2002, 2004-2017), Estonia (1995, 1998, 2000-2017), Georgia (2004-2010, 2014, 2016), Hungary (1998-2017), Latvia (2012-2015, 2017), Lithuania (1996, 1998-2017), Moldova (1997-2014), Montenegro (2007-2015), North Macedonia (1998, 2000, 2002-2006, 2008-2017), Poland (1995, 1996, 1999-2017), Romania (1995, 1997-2017), Russia (1996-2009, 2012-2017), Serbia (2002-2010, 2012-2017), Slovenia (2004-2017), Ukraine (1995, 1996, 1999, 2002-2010, 2017).

**Western Europe:** Austria (1995, 1997, 2000, 2003-2016), Belgium (2000, 2003-2014), Denmark (1995, 2000, 2003-2017), Finland (1995, 2000, 2003-2017), France (2015-2017), Germany (2000-2011, 2013, 2015, 2016), Greece (1995, 2003-2017), Iceland (2005, 2007, 2009-2015), Ireland (1995, 1996, 2000, 2003-2013), Italy (1995, 1998, 2000, 2003, 2005-2016), Luxembourg (2004, 2006-2007, 2009-2011, 2014), Norway (1995, 2000, 2003-2017), Spain (2003-2017), Sweden (2000, 2003-2017), Switzerland (2000, 2002, 2006-2017), United Kingdom (2005-2016).

**Table A1.** Country Crime Victimization Rate and Inequality, Latin American and Caribbean Countries, 1995–2018

| Variables                     | Country crime victimization rate |                    |                      |                     |                      |                     |                      |                     |
|-------------------------------|----------------------------------|--------------------|----------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
|                               | (1)                              | (2)                | (3)                  | (4)                 | (5)                  | (6)                 | (7)                  | (8)                 |
| Gini index                    | 0.0050**<br>(0.0024)             | 0.0050<br>(0.0032) | 0.0052*<br>(0.0028)  | 0.0052<br>(0.0031)  | 0.0056**<br>(0.0027) | 0.0056*<br>(0.0032) | 0.0048<br>(0.0031)   | 0.0048<br>(0.0029)  |
| GDP variation                 |                                  |                    | -0.2388*<br>(0.1377) | -0.2388<br>(0.1928) | -0.2404*<br>(0.1378) | -0.2404<br>(0.1913) | -0.2320*<br>(0.1376) | -0.2320<br>(0.1965) |
| Primary completion rate       |                                  |                    | -0.0015<br>(0.0011)  | -0.0015<br>(0.0009) | -0.0015<br>(0.0011)  | -0.0015<br>(0.0009) | -0.0015<br>(0.0011)  | -0.0015<br>(0.0009) |
| Poverty ratio at \$1.90 a day |                                  |                    | 0.0007<br>(0.0021)   | 0.0007<br>(0.0033)  |                      |                     |                      |                     |
| Poverty gap                   |                                  |                    |                      |                     | 0.0004<br>(0.0036)   | 0.0004<br>(0.0042)  |                      |                     |
| Poverty ratio at \$3.20 a day |                                  |                    |                      |                     |                      |                     | 0.0010<br>(0.0016)   | 0.0010<br>(0.0025)  |
| Observations                  | 257                              | 257                | 257                  | 257                 | 257                  | 257                 | 257                  | 257                 |
| R-squared                     | 0.5855                           | 0.5855             | 0.5922               | 0.5922              | 0.5920               | 0.5920              | 0.5927               | 0.5927              |
| Country dummies               | YES                              | YES                | YES                  | YES                 | YES                  | YES                 | YES                  | YES                 |
| Year dummies                  | YES                              | YES                | YES                  | YES                 | YES                  | YES                 | YES                  | YES                 |
| Standard errors               | Robust                           | Country cluster    | Robust               | Country cluster     | Robust               | Country cluster     | Robust               | Country cluster     |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable **Country crime victimization rate** is the percentage of families in the country in which the respondent indicates that at least one of its members has been the victim of a crime during the last twelve months (source: Latinobarómetro). The Latinobarómetro survey was not performed in 1999, 2012 and 2014. The crime victimization question was not included in the 2000 Latinobarómetro survey. **Gini index** is defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. 18 countries are included. All regressions include year and country dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5 and 7. Standard errors clustered at the country level in columns 2, 4, 6 and 8. \*\*\* p < .01 \*\* p < .05 \* p < .1.

Table A2. Female Homicides and Inequality, World, 1995–2017

| Variables                       | Log female homicides  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                        |                      |                        |                       |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|----------------------|------------------------|-----------------------|
|                                 | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   | (9)                   | (10)                  | (11)                   | (12)                 | (13)                   | (14)                  |
| Log Gini index                  | 1.9843***<br>(0.1015) | 1.9843***<br>(0.3106) | 1.7611***<br>(0.1075) | 1.7611***<br>(0.3226) | 0.4942**<br>(0.2425)  | 0.4942<br>(0.7385)    | 0.5268**<br>(0.2430)  | 0.5268<br>(0.7390)    | 0.4743*<br>(0.2435)   | 0.4743<br>(0.7395)    | 0.4141*<br>(0.2491)    | 0.4141<br>(0.7603)   | 0.5513**<br>(0.2421)   | 0.5513<br>(0.7278)    |
| GDP variation                   |                       |                       | 3.5521***<br>(0.8942) | 3.5521**<br>(1.5039)  | 1.1117<br>(0.8301)    | 1.1117<br>(1.2247)    | 1.2037<br>(0.8331)    | 1.2037<br>(1.2288)    | 0.9189<br>(0.8308)    | 0.9189<br>(1.2440)    | 0.8872<br>(0.8224)     | 0.8872<br>(1.2076)   | 0.5407<br>(0.8031)     | 0.5407<br>(1.1991)    |
| Primary completion rate         |                       |                       | -0.0018<br>(0.0038)   | -0.0018<br>(0.0094)   | -0.0045<br>(0.0037)   | -0.0045<br>(0.0097)   | -0.0054<br>(0.0037)   | -0.0054<br>(0.0098)   | -0.0042<br>(0.0037)   | -0.0042<br>(0.0096)   | -0.0042<br>(0.0037)    | -0.0042<br>(0.0096)  | -0.0013<br>(0.0037)    | -0.0013<br>(0.0098)   |
| Poverty ratio at \$1.90 a day   |                       |                       | 0.0164***<br>(0.0040) | 0.0164*<br>(0.0098)   | 0.0175***<br>(0.0044) | 0.0175<br>(0.0117)    |                       |                       |                       |                       | 0.0136***<br>(0.0045)  | 0.0136<br>(0.0111)   | -0.0012<br>(0.0051)    | -0.0012<br>(0.0121)   |
| Poverty gap                     |                       |                       |                       |                       |                       |                       | 0.0340***<br>(0.0126) | 0.0340<br>(0.0309)    |                       |                       |                        |                      |                        |                       |
| Poverty ratio at \$3.20 a day   |                       |                       |                       |                       |                       |                       |                       |                       | 0.0109***<br>(0.0022) | 0.0109*<br>(0.0064)   |                        |                      |                        |                       |
| GDP per capita                  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | -0.0000***<br>(0.0000) | -0.0000<br>(0.0000)  |                        |                       |
| Log (GDP per capita)            |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                        |                      | -0.3764***<br>(0.0609) | -0.3764**<br>(0.1657) |
| Eastern Europe                  |                       |                       |                       |                       | 0.6825***<br>(0.0601) | 0.6825***<br>(0.1966) | 0.7018***<br>(0.0595) | 0.7018***<br>(0.1933) | 0.6599***<br>(0.0608) | 0.6599***<br>(0.1994) | 0.4434***<br>(0.0954)  | 0.4434<br>(0.2965)   | 0.3662***<br>(0.0803)  | 0.3662<br>(0.2581)    |
| Latin America and the Caribbean |                       |                       |                       |                       | 1.1737***<br>(0.1303) | 1.1737***<br>(0.3999) | 1.1808***<br>(0.1309) | 1.1808***<br>(0.4023) | 1.1411***<br>(0.1289) | 1.1411***<br>(0.3910) | 0.9226***<br>(0.1367)  | 0.9226**<br>(0.4034) | 0.7828***<br>(0.1291)  | 0.7828**<br>(0.3810)  |
| North America                   |                       |                       |                       |                       | 0.6339***<br>(0.1315) | 0.6339*<br>(0.3355)   | 0.6233***<br>(0.1302) | 0.6233*<br>(0.3309)   | 0.6444***<br>(0.1314) | 0.6444*<br>(0.3359)   | 0.6639***<br>(0.1455)  | 0.6639*<br>(0.3756)  | 0.6527***<br>(0.1395)  | 0.6527*<br>(0.3595)   |
| Africa                          |                       |                       |                       |                       | 0.0985<br>(0.3642)    | 0.0985<br>(0.5930)    | 0.2311<br>(0.3722)    | 0.2311<br>(0.6063)    | 0.0103<br>(0.3654)    | 0.0103<br>(0.6126)    | -0.1648<br>(0.3850)    | -0.1648<br>(0.6669)  | -0.2565<br>(0.4011)    | -0.2565<br>(0.6703)   |
| Asia                            |                       |                       |                       |                       | 0.6844***<br>(0.0868) | 0.6844***<br>(0.2265) | 0.7287***<br>(0.0870) | 0.7287***<br>(0.2336) | 0.5845***<br>(0.0897) | 0.5845**<br>(0.2348)  | 0.3989***<br>(0.1183)  | 0.3989<br>(0.3223)   | 0.2075*<br>(0.1129)    | 0.2075<br>(0.3205)    |
| Year dummies                    | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                    | YES                  | YES                    | YES                   |
| Standard errors                 | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                 | Country cluster      | Robust                 | Country cluster       |
| R-squared                       | 0.2999                | 0.2999                | 0.3306                | 0.3306                | 0.4407                | 0.4407                | 0.4359                | 0.4359                | 0.4450                | 0.4450                | 0.4486                 | 0.4486               | 0.4670                 | 0.4670                |
| Observations                    | 823                   | 823                   | 823                   | 823                   | 823                   | 823                   | 823                   | 823                   | 823                   | 823                   | 823                    | 823                  | 823                    | 823                   |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the natural logarithm of the rate of intentional **Female homicides** per 100,000 female population (source: World Bank). **Log Gini index** is the natural logarithm of the Gini index defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa** and **Asia** are continental dummies (Western Europe is excluded). 80 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

Table A3. Male Homicides and Inequality, World, 1995-2017

| Variables                       | Log male homicides    |                       |                       |                       |                       |                       |                       |                       |                       |                       |                        |                       |                        |                        |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|------------------------|
|                                 | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   | (9)                   | (10)                  | (11)                   | (12)                  | (13)                   | (14)                   |
| Log Gini index                  | 4.5415***<br>(0.1308) | 4.5415***<br>(0.3905) | 4.2649***<br>(0.1371) | 4.2649***<br>(0.3892) | 1.7428***<br>(0.2579) | 1.7428**<br>(0.8251)  | 1.7643***<br>(0.2592) | 1.7643**<br>(0.8272)  | 1.6920***<br>(0.2584) | 1.6920**<br>(0.8251)  | 1.5931***<br>(0.2596)  | 1.5931*<br>(0.8302)   | 1.8318***<br>(0.2512)  | 1.8318**<br>(0.7903)   |
| GDP variation                   |                       |                       | 4.9374***<br>(1.0382) | 4.9374***<br>(1.6367) | 1.3267<br>(0.9324)    | 1.3267<br>(1.3724)    | 1.4218<br>(0.9296)    | 1.4218<br>(1.3772)    | 1.1191<br>(0.9299)    | 1.1191<br>(1.3772)    | 0.8752<br>(0.9035)     | 0.8752<br>(1.3126)    | 0.4719<br>(0.8935)     | 0.4719<br>(1.2875)     |
| Primary completion rate         |                       |                       | -0.0016<br>(0.0050)   | -0.0016<br>(0.0111)   | -0.0054<br>(0.0043)   | -0.0054<br>(0.0104)   | -0.0062<br>(0.0044)   | -0.0062<br>(0.0105)   | -0.0046<br>(0.0043)   | -0.0046<br>(0.0103)   | -0.0057<br>(0.0043)    | -0.0057<br>(0.0104)   | -0.0010<br>(0.0043)    | -0.0010<br>(0.0104)    |
| Poverty ratio at \$1.90 a day   |                       |                       | 0.0202***<br>(0.0053) | 0.0202*<br>(0.0115)   | 0.0166***<br>(0.0049) | 0.0166<br>(0.0129)    |                       |                       |                       |                       | 0.0086*<br>(0.0049)    | 0.0086<br>(0.0123)    | -0.0116**<br>(0.0058)  | -0.0116<br>(0.0137)    |
| Poverty gap                     |                       |                       |                       |                       |                       |                       | 0.0345**<br>(0.0135)  | 0.0345<br>(0.0341)    |                       |                       |                        |                       |                        |                        |
| Poverty ratio at \$3.20 a day   |                       |                       |                       |                       |                       |                       |                       |                       | 0.0122***<br>(0.0026) | 0.0122*<br>(0.0072)   |                        |                       |                        |                        |
| GDP per capita                  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | -0.0000***<br>(0.0000) | -0.0000**<br>(0.0000) |                        |                        |
| Log (GDP per capita)            |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                        |                       | -0.5652***<br>(0.0718) | -0.5652***<br>(0.1832) |
| Eastern Europe                  |                       |                       |                       |                       | 0.9360***<br>(0.0700) | 0.9360***<br>(0.2340) | 0.9541***<br>(0.0692) | 0.9541***<br>(0.2301) | 0.9068***<br>(0.0710) | 0.9068***<br>(0.2378) | 0.4546***<br>(0.1057)  | 0.4546<br>(0.3334)    | 0.4565***<br>(0.0914)  | 0.4565<br>(0.2959)     |
| Latin America and the Caribbean |                       |                       |                       |                       | 2.1579***<br>(0.1466) | 2.1579***<br>(0.4595) | 2.1640***<br>(0.1470) | 2.1640***<br>(0.4617) | 2.1180***<br>(0.1457) | 2.1180***<br>(0.4506) | 1.6481***<br>(0.1538)  | 1.6481***<br>(0.4530) | 1.5640***<br>(0.1477)  | 1.5640***<br>(0.4251)  |
| North America                   |                       |                       |                       |                       | 0.8958***<br>(0.1586) | 0.8958**<br>(0.4094)  | 0.8876***<br>(0.1575) | 0.8876**<br>(0.4049)  | 0.9141***<br>(0.1581) | 0.9141**<br>(0.4105)  | 0.9483***<br>(0.1863)  | 0.9483*<br>(0.4829)   | 0.9200***<br>(0.1700)  | 0.9200**<br>(0.4407)   |
| Africa                          |                       |                       |                       |                       | 0.7885**<br>(0.3202)  | 0.7885*<br>(0.4577)   | 0.9027***<br>(0.3203) | 0.9027**<br>(0.4527)  | 0.6377**<br>(0.3223)  | 0.6377<br>(0.4846)    | 0.2533<br>(0.3467)     | 0.2533<br>(0.5556)    | 0.2482<br>(0.3619)     | 0.2482<br>(0.5426)     |
| Asia                            |                       |                       |                       |                       | 1.2594***<br>(0.0990) | 1.2594***<br>(0.2604) | 1.3009***<br>(0.0989) | 1.3009***<br>(0.2643) | 1.1391***<br>(0.1047) | 1.1391***<br>(0.2786) | 0.6838***<br>(0.1373)  | 0.6838*<br>(0.3719)   | 0.5371***<br>(0.1362)  | 0.5371<br>(0.3774)     |
| Year dummies                    | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   | YES                    | YES                   | YES                    | YES                    |
| Standard errors                 | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                | Country cluster       | Robust                 | Country cluster       | Robust                 | Country cluster        |
| R-squared                       | 0.5685                | 0.5685                | 0.5897                | 0.5897                | 0.7055                | 0.7055                | 0.7040                | 0.7040                | 0.7089                | 0.7089                | 0.7190                 | 0.7190                | 0.7294                 | 0.7294                 |
| Observations                    | 830                   | 830                   | 830                   | 830                   | 830                   | 830                   | 830                   | 830                   | 830                   | 830                   | 830                    | 830                   | 830                    | 830                    |

Note: Ordinary least squares (OLS) regression estimates. The dependent variable is the natural logarithm of the rate of intentional **Male homicides** per 100,000 male population (source: World Bank). **Log Gini index** is the natural logarithm of the Gini index defined from 0 to 100 (source: World Bank). **GDP variation** per capita in constant prices (source: IMF). **Primary completion rate** is the number of new entrants (enrolled minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. **Poverty headcount ratio at \$1.90 a day** is the percentage of the population living on less than \$1.90 a day at 2011 international prices. **Poverty gap** is the mean shortfall of income from the poverty line. **Poverty headcount ratio at \$3.20 a day** is the percentage of the population living on less than \$3.20 a day at 2011 international prices. **Eastern Europe, Latin America and the Caribbean, North America, Africa** and **Asia** are continental dummies (Western Europe is excluded). 80 countries are included. All regressions include year dummies. The constant is not presented. Robust standard errors in parentheses in columns 1, 3, 5, 7, 9, 11 and 13. Standard errors clustered at the country level in columns 2, 4, 6, 8, 10, 12 and 14. \*\*\* p < .01 \*\* p < .05 \* p < .1.

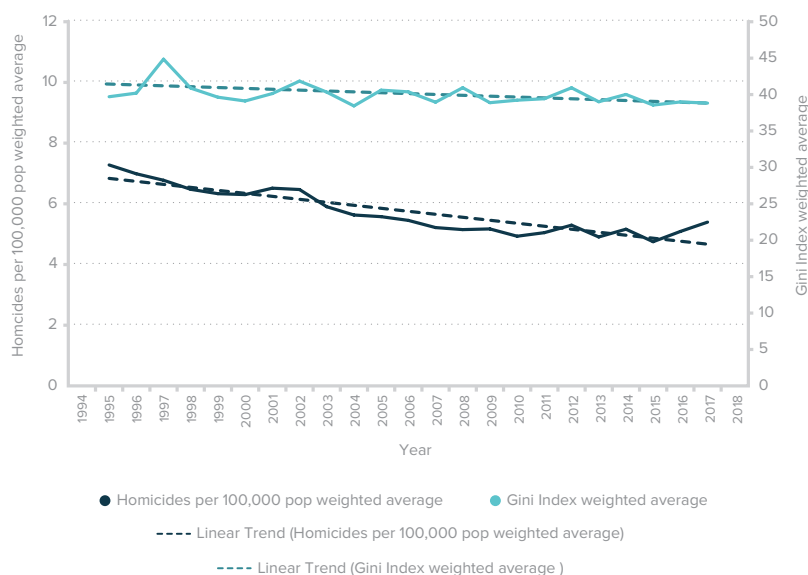
**Table A4.** Instrumenting Inequality with Historical Data

|                                     | (1)                       | (2)                    | (3)                                  | (4)                       | (5)                    | (6)                                  | (7)                       | (8)                    | (9)                                  |
|-------------------------------------|---------------------------|------------------------|--------------------------------------|---------------------------|------------------------|--------------------------------------|---------------------------|------------------------|--------------------------------------|
|                                     | Homicides<br>(World Bank) | Homicides<br>(GBDS)    | Crime<br>victimization<br>rate (WVS) | Homicides<br>(World Bank) | Homicides<br>(GBDS)    | Crime<br>victimization<br>rate (WVS) | Homicides<br>(World Bank) | Homicides<br>(GBDS)    | Crime<br>victimization<br>rate (WVS) |
| Second stage:                       |                           |                        |                                      |                           |                        |                                      |                           |                        |                                      |
| <b>Gini index</b>                   | 0.8188***<br>(0.2096)     | 0.6028***<br>(0.2031)  | 0.0147***<br>(0.0028)                | 0.2089<br>(0.6954)        | 0.1477<br>(0.5837)     | 0.0224***<br>(0.0048)                | 0.8231***<br>(0.1925)     | 0.7245***<br>(0.1803)  | 0.0170***<br>(0.0023)                |
| <b>WGI average indicators</b>       | -0.2764<br>(1.3766)       | -0.5745<br>(1.2377)    | 0.0360*<br>(0.0213)                  | -7.0942<br>(5.2151)       | -8.9617*<br>(4.7407)   | 0.0248<br>(0.0361)                   | -1.3468<br>(1.6145)       | -2.4329<br>(1.5678)    | 0.0506***<br>(0.0188)                |
| <b>Adj R-squared (second stage)</b> | 0.3403                    | 0.3122                 | 0.2729                               | 0.0924                    | 0.1369                 | 0.4273                               | 0.3470                    | 0.3779                 | 0.5150                               |
| First stage:                        |                           |                        |                                      |                           |                        |                                      |                           |                        |                                      |
| <b>WGI average indicators</b>       | -1.1146<br>(0.8141)       | -0.6508<br>(0.7650)    | -0.4278<br>(1.4687)                  | -2.4851<br>(1.6404)       | -2.2352<br>(1.6440)    | 0.7271<br>(2.8213)                   | -1.9372***<br>(0.6530)    | -1.8881***<br>(0.6490) | -1.0855<br>(1.2977)                  |
| <b>Ex-colony</b>                    | 12.0618***<br>(1.6893)    | 10.9866***<br>(1.4435) | 11.5247***<br>(2.2405)               |                           |                        |                                      | 7.4983**<br>(3.7019)      | 7.1473*<br>(3.6710)    | 9.1225<br>(8.3650)                   |
| <b>Settler Mortality</b>            | -0.0099<br>(0.0072)       | -0.0021<br>(0.0018)    | -0.0005<br>(0.0035)                  |                           |                        |                                      | 0.0464<br>(0.0297)        | 0.0547*<br>(0.0280)    | -0.0054<br>(0.1027)                  |
| <b>African Slavery</b>              |                           |                        |                                      | 0.8613**<br>(0.3978)      | 1.0925***<br>(0.3711)  | 0.6538<br>(0.7366)                   | 0.5761<br>(0.4393)        | 0.6058<br>(0.4369)     | 0.2740<br>(0.8837)                   |
| <b>Native Slavery</b>               |                           |                        |                                      | 15.9835***<br>(4.4271)    | 16.5603***<br>(4.4405) | 16.6211**<br>(6.0501)                | 14.8321***<br>(3.9490)    | 14.8107***<br>(3.9405) | 13.6764**<br>(6.2653)                |
| <b>Adj R-squared (first stage)</b>  | 0.4700                    | 0.4363                 | 0.4060                               | 0.4173                    | 0.4411                 | 0.2881                               | 0.7307                    | 0.7434                 | 0.5610                               |
| <b>Observations</b>                 | 90                        | 107                    | 39                                   | 29                        | 31                     | 14                                   | 70                        | 71                     | 32                                   |

Note: 2SLS instrumental variables regressions. In columns 1, 2, 4, 5, 7 and 8 the dependent variable **Homicides** is the country average of intentional homicides per 100,000 population calculated for each country using the available year observations from 1995 to 2017 (source: World Bank in columns 1, 4 and 7, and Global Burden of Disease Study in columns 2, 5 and 8). In columns 3, 6 and 9 the dependent variable **Crime victimization rate** is the percentage of families in the country in which the respondent indicates that at least one of its members has been the victim of a crime during the last twelve months (source: World Values Survey). **Gini index** is defined from 0 to 100 (source: World Bank). **WGI average indicators** is the 1996–2017 average of the six Worldwide Governance Indicators project. **Ex colony** and **Settler Mortality** were taken from Acemoglu, Johnson, and Robinson (2001). **Ex colony** is a dummy variable that equals one if the country was a former colony, zero otherwise. **Settler Mortality** is potential settler mortality, measured in terms of deaths per annum per 1,000 “mean strength” (raw mortality numbers are adjusted to what they would be if a force of 1,000 living people were kept in place for a whole year). **African slavery** and **Native slavery** were taken from Soares, Assunção, and Goulart (2012). **African slavery** is the ln of the average of the number of African slaves received for each country in each 25-year interval divided by historical populations. **Native slavery** is the country population in 1500 divided by its population in 1850. The constants are not presented. Standard errors in parentheses.

\*\*\* p < .01 \*\* p < .05 \* p < .1

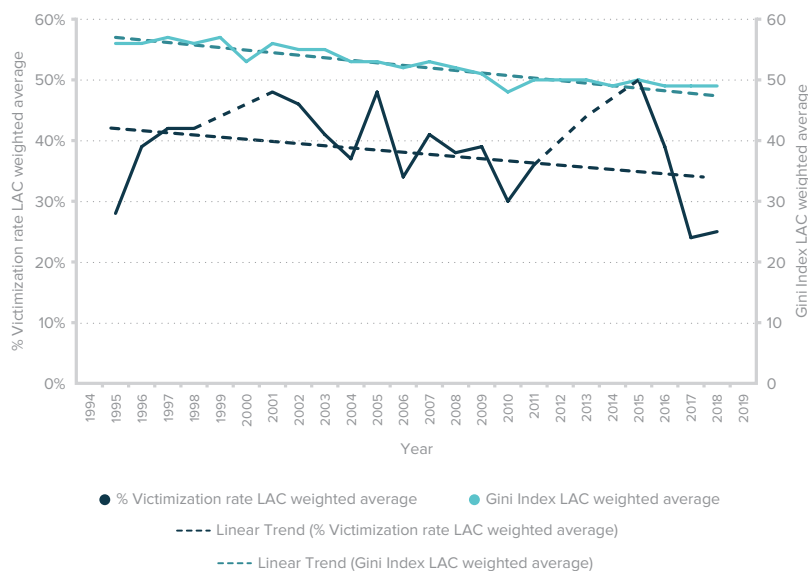
**Figure A1. Homicides and Inequality, Population-Weighted Averages, World 1995–2017**



Source: Authors' calculations based on data of the World Bank.

Note: The graph represents the average number of homicides per 100,000 population on the left vertical axis, and the average Gini index on the right vertical axis. Population-weighted averages are calculated using the population in the sample of countries available for each year. Linear trends are indicated by dotted lines.

**Figure A2. Victimization Rate and Inequality, Population-Weighted Averages, Latin American and Caribbean Countries, 1995–2018**



Source: Authors' calculations based on data from the Latinobarómetro Survey (victimization rate) and the World Bank (Gini indexes) for Latin American and Caribbean (LAC) countries.

Note: The graph represents the victimization rate average on the left vertical axis, and the Gini index average on the right vertical axis. For each country-year, the victimization rate is the percentage of families that answered in the Latinobarómetro survey that at least one of its members had been a victim of a crime during the last twelve months. Population-weighted averages are calculated using the population in the sample of countries available for each year. Although not every country is available every year, the sample includes 18 LAC countries. Linear trends in dotted lines.

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Time for a New Course: An Essay on Social Protection and Growth in Latin America

Santiago Levy / Guillermo Cruces

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Implications of Minimum Wage Policies for Labour Markets with High Informality and Frictions

Luca Flabbi