

Economic Determinants of Within-Country Political Instability and Violence: A Panel Data Examination of Central and South America

Michael Biskupic

Abstract:

This paper examines the potential impact of economic factors on within-country violence and instability utilizing a panel data approach. More specifically, this paper examines the impact of within-country income inequality on a measure of political stability and a measure of within-country violence. Utilizing a Generalized Least Squares method, this paper finds that only in countries with a per-capita income less than \$5000 is there a significant relationship between income inequality and violence. This paper concludes with a discussion of the results, recommendations for future research, and a section on policy recommendations based on the empirical results and potential risks not explicitly shown in the data.

JEL Classification: D31, D74

Keywords: Inequality, Violence

Department of Economics, Bryant University, 1150 Douglas Pike, Smithfield, RI02917.
Phone: (413) 579-2707. Email: mbiskupic@bryant.edu

1.0 Introduction

Economics is fundamentally a science tasked with explaining and predicting human behavior. Through incentives, resource channels, and institutions, economic forces perpetually work to exert influence over everything within a society; from daily decision making to long-term development potential. While economic science is generally focused on explaining factors and interactions that determine the production, distribution, and consumption of goods and services, these same forces that determine resource use can be powerful influencers upon the social fabric, state fragility, and ultimately interpersonal violence (Lee, 2016).

In recent decades, the world has experienced a significant decline in interstate violence. However, violence that results from intrastate conflict and instability persists, expanding and compounding existing tensions (Szayna et al., 2017). Although the immediate cause of violence is political or social, economic forces are not free from these dynamics. Poverty, unemployment, and inequality are often present in states where instability and violence are prevalent.

Inequality, in particular, has gained increased attention in recent years. The unmitigated wave of globalization that has occurred over the past three decades has been credited with increasing within-country inequality, despite increases in per-capita incomes. In addition to structural economic changes as a result of globalization, within-country inequality has been a predominant feature of many developing nations for decades preceding globalization's advance. In many cases, inequality has persisted as the result of antiquated institutions operating as lasting vestiges of colonial or monarchical eras (Acemoglu and Robinson, 2012). Central and South America exhibit this history with clarity. Spanish and Portuguese colonial rule catalyzed the initial institutional framework that guided early resource distribution and economic activity (Acemoglu and Robinson, 2012). Into the 20th century, high levels of income inequality relative

to global averages were common throughout Central and South America, notably Colombia, Chile, Venezuela, and Mexico (The World Bank, 2021).

Violence and unstable politics have similarly affected this region throughout history. Political turmoil often turned violent throughout the 20th century. Ideological and narco-insurgencies, as well as violent criminality, similarly thrived over the same period, and continue to plague the region into recent years (Grillo, 2017). Over the past decade, the Northern Triangle of El Salvador, Honduras, and Guatemala have been noted for their rampant violence, and Mexico continues to battle with similar challenges. Observing these trends, questions surrounding an association between inequality and violence in Central and South America begin to mount. Does inequality cause within-country violence? If not directly causing violence, does inequality increase social fissures, leading to a greater propensity for instability or violence? This paper seeks to answer these questions, adding to the existing literature and advancing understanding of regional economic dynamics to chart a more prosperous path forward.

The rest of this paper is organized as follows: Section 2 provides an overview of the existing literature on the subject. Section 3 outlines regional trends impacting this paper's research question. Section 4 describes the data and empirical strategy. This paper is concluded by Section 5 which discusses the model results, research limitations, and policy implications, as well as recommendations for future research.

2.0 Literature Review

There has been extensive research within the economic and political literature examining the interactions of inequality, instability, and violence. Aiming broadly, Thorbecke and Charumilind (2002) describe the theoretical framework between inequality and economic outcomes by invoking the unified model first put forward by Galor (2000). Once inequality's

nature has been established, Thorbecke and Charumilind find the primary channels by which inequality may influence political instability, and potential violence, is through 1.) relative deprivation, or 2.) resource mobilization. Stewart (2002) aims to examine the root cause of violent conflict in developing countries. In examining economic drivers, Stewart identifies the *Group Motivation Hypothesis*, *Private Motivation Hypothesis*, *Failure of the Social Contract*, and the *Green War Hypothesis*. In examining the empirical evidence, Stewart identifies group inequality as a consistent explanatory variable of conflict in developing countries, although he does not examine vertical distributions of resources at the individual level. Cramer (2003) again asks the question regarding economic inequalities and intrastate conflict. His findings align with Stewart's (2002), concluding that economic inequality is hugely important to explaining civil conflict when the economic is considered to be inseparable from the social, cultural, and historical. Cramer (2003), like Stewart (2002), concludes that horizontal inequality causes civil conflict, while vertical inequality, as captured by the Gini coefficient, does not.

However, differing perspectives on the vertical distribution of resources at the individual level exist and exhibit robust empirical support. Alesina and Perotti (1995), utilizing a 71 country sample from 1960 to 1985, find income inequality to exert a significant positive effect on political instability. Nafziger and Auvinen (2002) find that high-income inequality can be a source of instability via the increased probability of humanitarian emergencies. They base their findings on the contribution of income inequality to absolute deprivation of portions of the population, regardless of national growth rates. They also find that income inequality, through the demonstration effect of consumption levels of the relatively well off, increases perceptions of relative deprivation, even in the absence of absolute deprivation, increasing the risk of political disintegration.

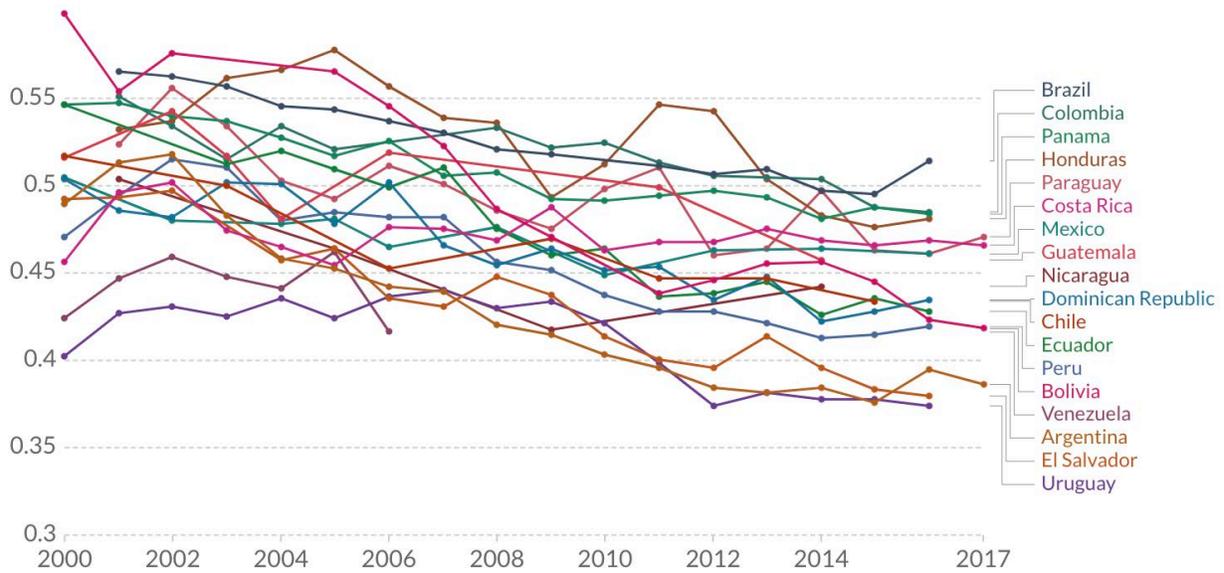
Though there is evidence that income inequality contributes to within-state instability (Alesina and Perotti (1995), Nafziger and Auvinen (2002)), empirical links to violence also demonstrate the effects of high levels of inequality. Rashad et al. (2018) examine the relationship between income inequality and interpersonal violence, namely violence against women, utilizing the 2005-2006 National Family Health Survey of India. Using a variety of regression techniques, they find that income inequality was significant in increasing the risk of violence on individuals. Similarly, Jacobs and Richardson (2008), utilizing a fixed-effect panel data approach, find evidence in support of relative deprivation theory, where levels of income inequality are significantly associated with homicides in developed democracies. Their analysis also points to the role of young males as a contributor to increased violence risk. Similar results are found by Enamorado et al. (2015), who employ a panel data approach to examine the effects of inequality on homicide rates across municipalities in Mexico. Their estimates indicate a significant positive relationship between income inequality and the homicide rate between 1990 and 2010, with results being robust across regression techniques. Utilizing a cross-country approach with a sample of 165 countries in 2010, Ouimet (2012) finds evidence that income inequality is a significant predictor of the homicide rate in all countries. Ouimet (2012), through subsample analysis, also finds that income inequality is the strongest predictor of homicide rates for countries with a medium level of human development. Further evidence is given by Poveda's (2011) analysis of homicides in Colombian cities. Utilizing several panel data approaches, Poveda (2011) finds that income inequality is a significant predictor of homicides across seven Colombian cities, and historical data indicates a significant positive relationship between income inequality and homicide.

2.1 Theoretical Framework:

Based on the conclusions of the above-mentioned empirical literature, this paper utilizes the following theoretical framework as the basis for its empirical examination. First, this paper suspects that higher levels of income inequality tend to exert increased pressure on social structures, exacerbating existing social fissures and opening new ones, via relative deprivation channels at both the individual and group levels. The tendency of humans to grant greater concern over relative status than absolute status provides support for this linkage of economic and social dynamics (Frank, 2000). Second, through these social fissures, there now exists an increased propensity for deviations from the norms of political processes and increased within-country violence, as discontent grows among individuals and groups seeing widenings disparities among the “haves” and “have-nots”. Through this framework, it is assumed that the higher the level of income inequality, the greater the effect of social fracturing, and the greater the potential for instability and violence. This relationship is theorized to operate in a linear fashion, *ceteris parabis*.

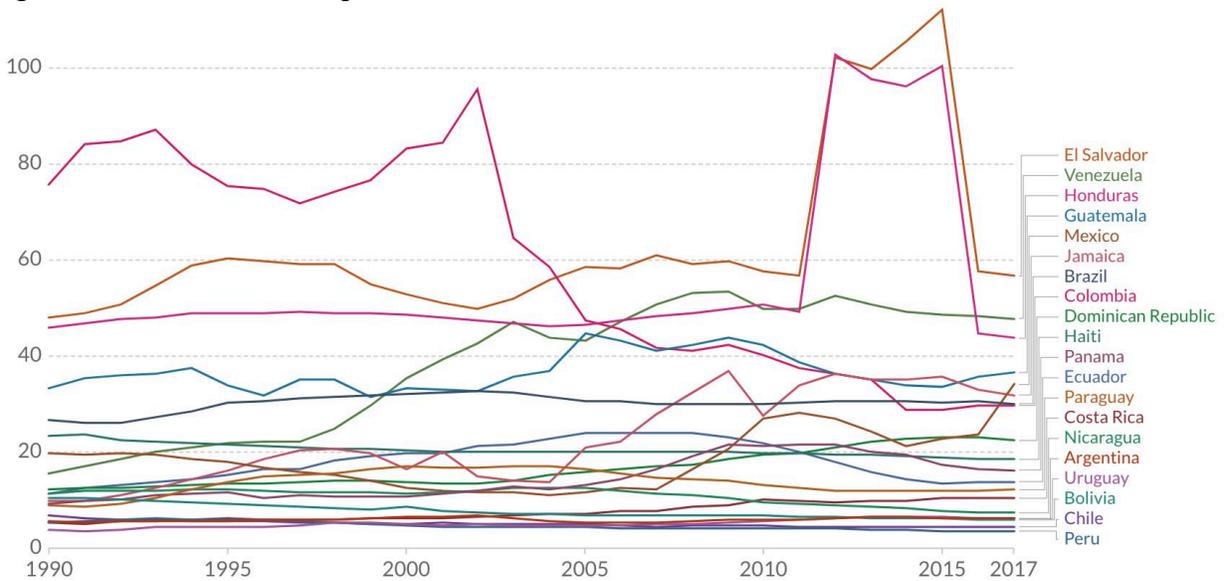
3.0 Regional Trends

Figure 1: Income Inequality by Gini Coefficient, 2000-2017¹



Source: Socio-Economic Database for Latin America and the Caribbean (CEDLAS and The World Bank)
 OurWorldInData.org/income-inequality • CC BY

Figure 2: Homicide Deaths per 100,000, 1990-2017



Source: IHME, Global Burden of Disease
 Note: To allow comparisons between countries and over time this metric is age-standardized.

OurWorldInData.org/homicides • CC BY

¹ Inequality data (Gini Coefficient) is largely missing prior to 1999 in the observed sample. 2000-2017 series range allows for general trend overview.

Figure 3: Conflict and Terrorism-Related Deaths, 1990-2017

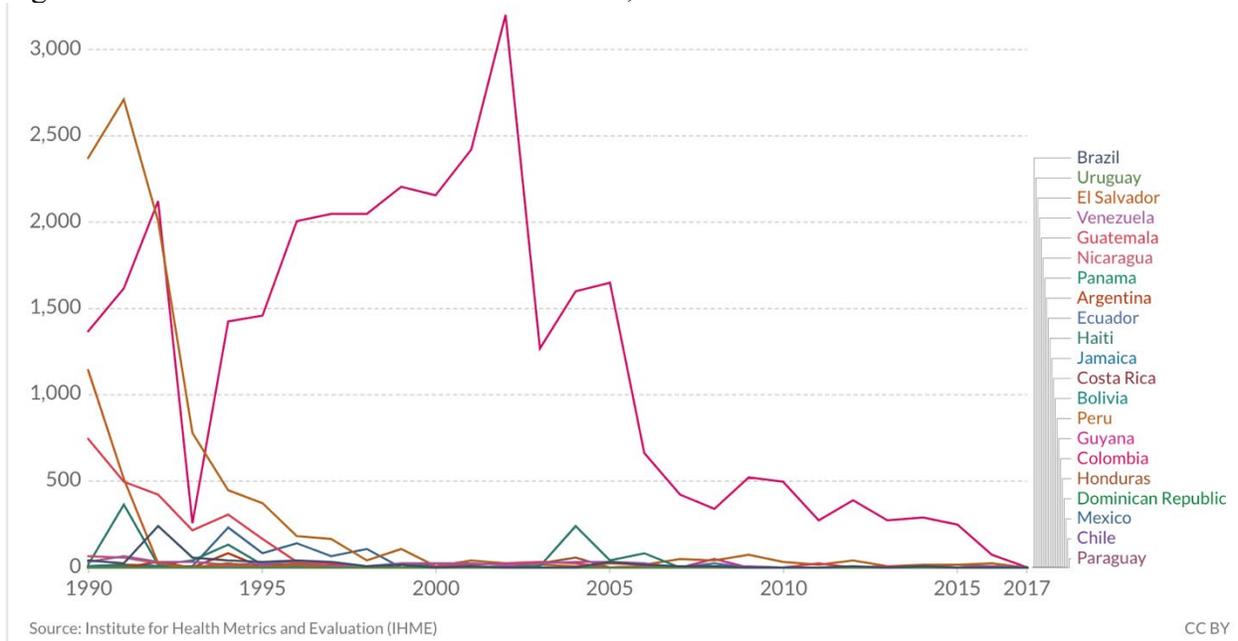
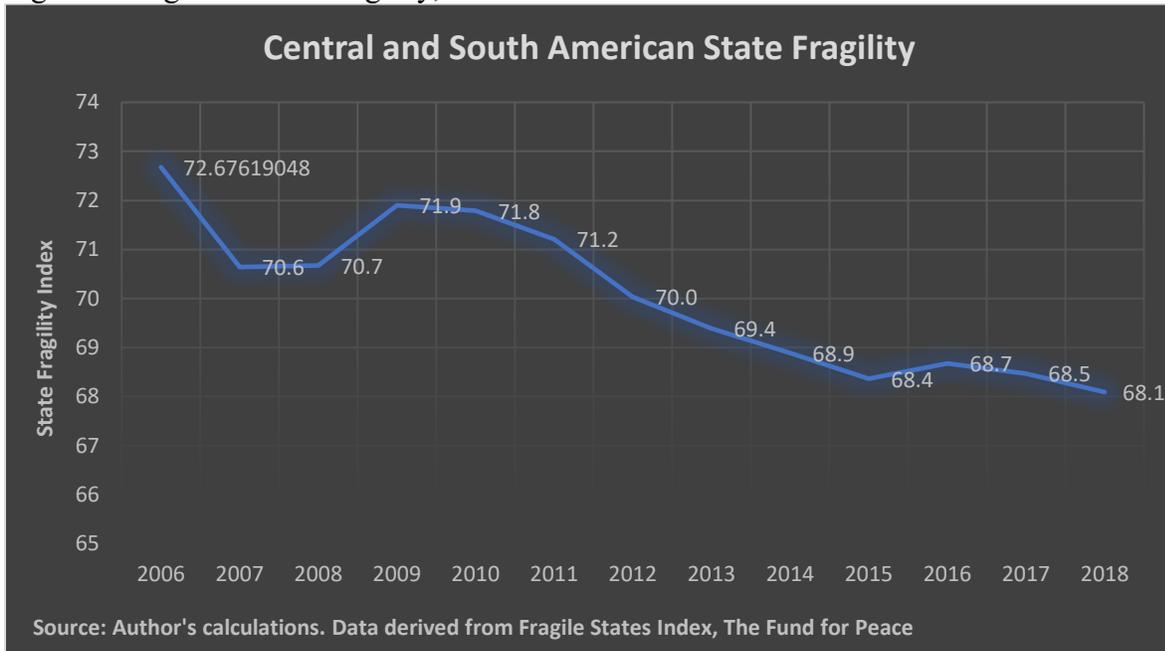


Figure 4: Regional State Fragility, 2006-2018²



² Time series range differences attributed to data limitations.

4.0 Data and Empirical Methodology:

The data for this research is derived from a variety of international development organizations. The regional sample is constructed from twenty-one Central and South American nation-states³. The data is oriented on an annualized time series range of 2000-2018. The dependent variable *STAB* is an index value representing state stability and security. This variable is valued between -2.5 and 2.5, with the lower values indicating greater instability and higher values indicating greater stability. Data for *STAB* was collected from the Political Stability and Absence of Violence/Terrorism Estimate of the World Bank Governance Indicators. Similarly, the dependent variable *VIOL* is a value of within-country violence and is a measure of homicide deaths per 100,000. The independent variable *INEQ* is the Gini coefficient per country as a measure of within-country income inequality. The independent variable *GDPPC* is a measure of gross domestic product per capita by country of observation (Constant 2010 Dollars). *UNEMPLOY* is the proportion of a country's labor force that is unemployed. *CPI* is a measure of inflation by consumer price index, with 2010 operating as a base year (Value= 100). *POV* is a measure of multidimensional poverty per country as a proportion of the total population. *YMPOP* is a measure of the male population under the age of 25 as a proportion of the total population. Data for variables *VIOL*, *INEQ*, *GDPPC*, *UNEMPLOY*, *CPI*, *POV*, and *YMPOP* were collected from The World Bank World Development Indicators.

³ Belize, Cuba, and Suriname are omitted from this sample, despite being within the region of interest. These states do not have available data that would allow for proper estimation within the larger sample.

Table 1: Summary Statistics

<u>Variable</u>	<u>Observations</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Min</u>	<u>Max</u>
<i>Year</i>	399	2009	5.484102	2000	2018
<i>STAB</i>	399	-0.3109913	0.6329223	-2.374467	1.091703
<i>VIOL</i>	399	22.09517	19.03381	2.466359	105.2312
<i>INEQ</i>	399	48.33606	5.21782	35	61.6
<i>GDPPC</i>	399	6161.513	3783.377	1105.082	15111.7
<i>UNEMPLOY</i>	399	0.0730546	0.0387829	0	0.2052
<i>CPI</i>	399	1.30E+08	2.60E+09	31.84644	5.20E+10
<i>POV</i>	399	0.3444598	0.1727085	0.029	0.786
<i>YMPOP</i>	399	0.0948392	0.0084292	0.0743403	0.1117561

Figure 5: Gini – Stability Index Plot

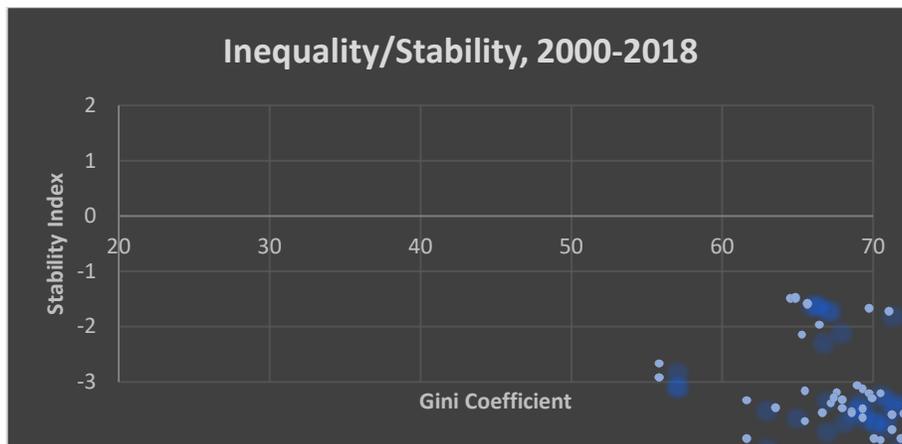


Figure 6: Gini – Homicide Plot

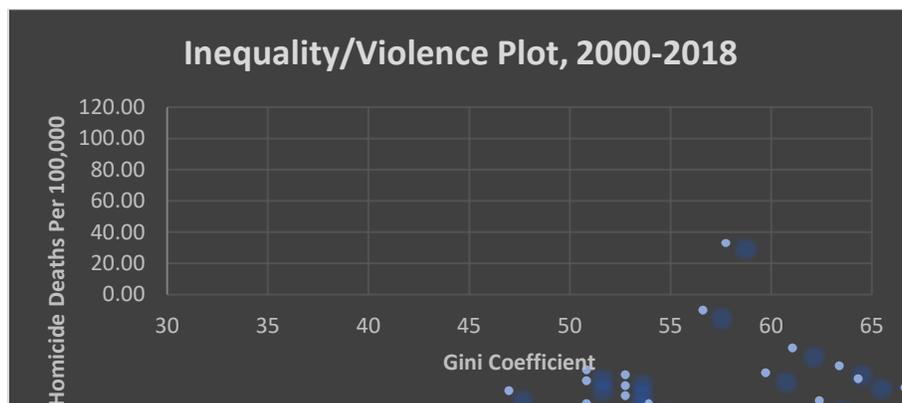


Figure 5 represents plotted observations between measures of income inequality and political instability. By this chart, no clear relationship is observable. However, there do appear to be two loosely connected groupings of observations, separated by the zero points of the stability index. Figure 6 represents a plotting of data between income inequality and homicide deaths, with a general upward trend of homicides detected as inequality levels increase. Like Figure 5, there also appear to be two distinct groupings of data points, with the Figure 6 groupings separated around the 25 homicides per 100,000 mark. The possible existence of two distinct observation groups is noted and is included in a reexamination of the modeling strategy described later.

4.1 General Models

The general multivariate regression models used by this paper are as follows,

$$STAB_{it} = \alpha_{it} + \beta_1 IIN_{it} + \beta_2 GDPpc_{it} + \beta_3 UNEMP_{it} + \beta_4 POV_{it} + \beta_5 CPI_{it} + \beta_6 MPOP_{it} + \varepsilon_{it}$$

$$VIOL_{it} = \alpha_{it} + \beta_1 IIN_{it} + \beta_2 GDPpc_{it} + \beta_3 UNEMP_{it} + \beta_4 POV_{it} + \beta_5 CPI_{it} + \beta_6 MPOP_{it} + \varepsilon_{it}$$

4.2 Disaggregated Models:

However, based on differences in observations found in the dataset, it is suspected that there is an income-per-capita threshold in which relationships between variables are altered. Therefore, the models are disaggregated into Low-Middle Income and Middle-Income groups. As a result of the disaggregation being along a per capita income threshold, the independent variable *GDPPC* is omitted.

$$LMISTAB_{it} = \alpha_{it} + \beta 1 IIN_{it} + \beta 2 UNEMP_{it} + \beta 3 POV_{it} + \beta 4 CPI_{it} + \beta 5 MPOP_{it} + \varepsilon_{it}$$

$$MISTAB_{it} = \alpha_{it} + \beta 1 IIN_{it} + \beta 2 UNEMP_{it} + \beta 3 POV_{it} + \beta 4 CPI_{it} + \beta 5 MPOP_{it} + \varepsilon_{it}$$

$$LMIVOL_{it} = \alpha_{it} + \beta 1 IIN_{it} + \beta 2 UNEMP_{it} + \beta 3 POV_{it} + \beta 4 CPI_{it} + \beta 5 MPOP_{it} + \varepsilon_{it}$$

$$MIVOL_{it} = \alpha_{it} + \beta 1 IIN_{it} + \beta 2 UNEMP_{it} + \beta 3 POV_{it} + \beta 4 CPI_{it} + \beta 5 MPOP_{it} + \varepsilon_{it}$$

5.0 Results

To test the general models, this paper utilizes fixed effects and random effects Generalized Least Squares techniques. The results of the general model analysis are listed below.

Aggregate Model Results:

Table 2: Stability Fixed Effects and Random Effects

	Stability (Fixed Effects)		Stability (Random Effects)	
	Coef	P> Z	Coef	P> Z
INEQ	0.00411	0.436	0.0056028	0.269
GDPPC	0.00000816	0.629	0.0000100	0.508
UNEMPLOY	-1.16843800	0.142	-0.8973	0.235
CPI	-0.00000002	0.482	-0.00000003	0.433
POV	-0.7380421	0.007***	-0.85729	0.001***
YMPOP	2.66605	0.434	1.398561	0.7
Constant	-0.4723916	0.302	-0.4134839	0.366

Note: **p<.05. ***p<.01

Table 3: Violence Fixed Effects and Random Effects:

	Violence (Fixed Effects)		Violence (Random Effects)	
	Coef	P> Z	Coef	P> Z
<i>INEQ</i>	-0.0379657	0.798	-0.05589931	0.701
<i>GDPPC</i>	0.0003169	0.481	0.0002034	0.633
<i>UNEMPLOY</i>	30.76952	0.1400	27.45877	0.175
<i>CPI</i>	0.000	0.355	0.000	0.317
<i>POV</i>	5.581853	0.454	5.5833295	0.427
<i>YMPOP</i>	-105.3581	0.286	-94.05879	0.337
<i>Constant</i>	27.68228	0.286	28.31756	0.029

Note: **p<.05. ***p<.01

The results of the general model, shown in Table 2 and Table 3, fail to find any significant relationship between income inequality and political stability or violence. The results of Figure 7 and Figure 8 provide levels of significance and signs that fail to reject the null hypothesis of this examination utilizing both fixed and random effects approaches. Seeing the little utility in these results, this paper invokes the disaggregated models listed above to account for differences in state development by per capita income levels.

Disaggregated Model Results:

Table 4: Disaggregated Stability GLS (Random Effects):

	Political Stability (Low Middle Income Group)		Political Stability (Middle Income Group)	
	Coef	P> Z	Coef	P> Z
<i>INEQ</i>	0.00265	0.677	0.296944	0.021**
<i>UNEMPLOY</i>	-1.723498	0.184	-2.932403	0.009**
<i>CPI</i>	0.0027179	0.001***	-2.78E-12	0.571
<i>POV</i>	0.299816	0.329	-0.9493389	0.049**
<i>YMPOP</i>	-6.358926	0.279	5.730054	0.401
<i>Constant</i>	-0.2724465	0.72	-1.610212	0.031**

Note: **p<.05. ***p<.01

Table 5: Disaggregated Violence GLS (Random Effects):

	Violence (Low Middle Income Group)		Violence (Middle Income Group)	
	Coef	P> Z	Coef	P> Z
<i>INEQ</i>	0.4851088	0.049**	-0.6133126	0.009**
<i>UNEMPLOY</i>	-8.54772	0.818	27.98221	0.144
<i>CPI</i>	0.0674213	0.026**	-2.30E-10	0.016
<i>POV</i>	0.542393	0.955	1.791788	0.817
<i>YMPOP</i>	214.826	0.236	0.5478055	0.387
<i>Constant</i>	-22.88841	0.392	41.7765	0.000***

Note: **p<.05. ***p<.01

The results provided by the disaggregated models are **mixed**. First, as mentioned in the *Data* section of this paper, analysis of the dataset suspects there to be two distinct groupings of observations operating around certain thresholds. When including per-capita income, as measured by *GDPPC*, into this analysis, data behavior becomes clearer. There is a per-capita income threshold that separates data behavior within this dataset. This threshold is found to be roughly \$5000, close to The World Bank's defined separation of Low-Middle Income and Middle-Income states by a GNI per capita threshold of \$4,045. Therefore, the data set is

separated into two distinct sets. Observations, where per capita income is below \$5000, are included in the Low-Middle Income Group. Observations, where per capita income is above \$5000, are included in the Middle-Income Group. The separated groupings are then analyzed through Generalized Least Squares for both Political Stability and Violence models. Table 4 shows the results of the Disaggregated Political Stability Model. The results shown in Table 4 failed to find a significant relationship between income inequality and political stability within the Low-Middle Income Group. However, there is a statistically significant, positive, relationship found between income inequality and political stability in the Middle-Income group.

Table 5 shows the results of the Disaggregated Violence Model. For the Middle-Income group, this model finds a statistically significant, negative relationship between income inequality and violence. However, the results of the Low-Middle Income Group find a significant, positive relationship between income inequality and violence. A result confirming the theoretical framework listed above.

5.1 Limitations:

This paper identifies three major limitations of its examination. First, concerns regarding the use of index data are merited in this case. The variable *STAB* has an inequality measure included in its calculation. This adds collinearity issues to model estimation. Although the primary conclusions of this paper are not derived from the model utilizing *STAB*, the use of index data with an included inequality aspect may limit the accuracy of the model's results. A second limitation of this paper is the use of the Gini Coefficient as a measure of income inequality. Although the Gini Coefficient is the traditional indicator of the income distribution, specific data on income held by the top .01%, 1%, 10% of earners could yield much higher quality results, adding to the accuracy of this paper's estimation. A final limitation of this paper

is the limited availability of quality data in observed countries. Much of the data collected over the observed periods included long gaps, necessitating the estimation of data points.

Furthermore, large gaps in the data of higher quality indicators demanded the use of less-optimal control variables (Ex: the use of multi-dimensional poverty rather than poverty at national poverty lines, which would have been a better indicator of relative poverty within specific countries).

5.2 Conclusion:

The purpose of this paper was to examine the relationship between income inequality and political instability and violence in Central and South America. Based on the results of this paper's estimation, only in Central and South American states with a per-capita income less than \$5000 is income inequality a significant predictor of violence. Due to the mixed nature of this paper's results, future research should include the following: 1.) The impact of wealth distribution, 2.) The use of inequality vectors, and 3.) Examinations of inequality perceptions. First, Unequal wealth distribution is also prevalent in the observed region. The result of a long history of exploitative institutions and pervasive corruption and cronyism. The impact of wealth inequality on political stability and violence should be explored for a more comprehensive understanding of the relationship between economic inequalities and violence. Second, while this paper only utilizes a single measure of inequality, future research should explore the use of multi-measure inequality vectors to gain a holistic view of inequalities' nature as it relates to instability and violence in developing states. Third, and most importantly, the role of inequality perceptions should be explored going forward. Stewart (2002) highlights the importance of perceptions in his analysis of inequality and violence. Due to the mixed results of this paper, it is possible that high levels of income inequality do not directly cause increased instability or

violence. Rather, it is the recognition of unequal distributions that cause instability and violence. If this is the case, such a relationship would require some sort of social catalyst for existing inequalities to trigger social fractures. If high levels of inequality are present in a state, but the popular perception does not provide it recognition, then social fissures fail to materialize. It is possible that only when popular perceptions acknowledge high levels of inequality that social fracturing occurs, resulting in an increased potential for instability and violence.

5.3 Policy Implications and Recommendations:

The results of this paper provide insight into potential political and social risks in low-middle income countries, specifically in Latin America, because of high levels of income inequality. Although both income inequality and measures of violence have, on average, been decreasing in the region over the past fifteen years, close attention should be paid to income distribution dynamics within low-middle income countries. This paper's empirical analysis concludes that greater income inequality is associated with higher levels of violence, as measured by homicides per 100,000, in states with a per capita income below \$5000. If suspicions regarding perceptions of inequality, as described above, are substantiated, then higher levels of income inequality, and economic inequalities generally, may increase the systemic risk level of developing states, leading to a greater potential for harsh deviations from political norms and processes, and higher levels of violence. Many of the states in the observed region, and around the world, face significant challenges to their sustainable development, including corruption, health, and education disparities, and poverty. Without broad increases in standards of living, increases in income inequality could add to existing social pressures, increasing the potential for social fracturing and violence. The rapid rise of political movements that alter prevailing sentiment regarding economic development, social structure, or resource distributions

could act as catalyzing agents toward social fracturing and violence. A conversion of potential risk to material and physical harm. Therefore, as mentioned above, close attention must be paid to income distributions within developing countries to minimize potential risks to sustainable development.

References

- Acemoglu, D., & Robinson, J. A. (2012). *Why Nations Fail*. Random House.
- Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, 40.
- Auvinen, J., & Nafziger, E. W. (1999). The Sources of Humanitarian Emergencies. *Journal of Conflict Resolution*, 43(3).
- Cramer, C. (2003). DOES INEQUALITY CAUSE CONFLICT? *Journal of International Development*, 15.
- Enamorado, T., Lopez-Calva, L. F., Rodriguez-Castelan, C., & Winkler, H. (2016). Income Inequality and Violent Crime: Evidence from Mexico's Drug War. *Journal of Development Economics*, 120.
- Frank, R. H. (2000). *Luxury fever: Money and happiness in an era of excess*. Bryn Mawr, PA: American College.
- Grillo, I. (2017). *El Narco: The Bloody Rise of Mexican Drug Cartels*. London: Bloomsbury.
- Jacobs, D., & Richardson, A. M. (2008). Economic inequality and Homicide in the Developed Nations From 1975 to 1995. *Homicide Studies*, 12(1).
- Lee, B. X. (2016). Causes and cures VI: The political science and economics of violence. *Aggression and Violent Behavior*, 28.

- Nafziger, E. W., & Auvinen, J. (2002). Economic Development, Inequality, War, and State Violence. *World Development*, 30(2).
- Ouimet, M. (2012). A World of Homicides: The Effect of Economic Development, Income Inequality, and Excess Infant Mortality on the Homicide Rate for 165 Countries in 2010. *Homicide Studies*, 16(3).
- Rashad, A. S., Sharaf, M. F., & Mansour, E. H. (2018). Does Income Inequality Increase Violence Against Women? An Instrumental Variable Approach. *European Journal of Development Research*, 31.
- Stewart, F. (2002). Root Causes of Violent Conflict in Developing Countries. *Development Studies*, 324.
- Szayna, T., Watts, S., O'Mahony, A., Frederick, B., & Kavanagh, J. (2017). What Are the Trends in Armed Conflicts, and What Do They Mean for U.S. Defense Policy? Retrieved from https://www.rand.org/pubs/research_reports/RR1904.html
- Thorbecke, E., & Charumilind, C. (2002). Economic Inequality and Its Socioeconomic Impact. *World Development*, 30(9).
- The World Bank Group - International Development, Poverty, & Sustainability. Retrieved April 02, 2021, <https://www.worldbank.org/en/home>