The Political Economy of Violence and Development in Latin America

by

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ABSTRACT

Violence has played a crucial role in shaping political institutions in Latin America through the interactions of power, revolutions, and individual's resistance. The primary research objective of this dissertation is to examine those interactions within countries and organizations affected by conflict. The first chapter analyzes the impact of Augusto Pinochet's autocracy on the Chilean economy. The study compares outcomes under Pinochet's leadership with those in a synthetic counterfactual made of a weighted average of countries with similar characteristics. I find that, relative to the control, income per capita did not diverge till several years after Pinochet's coup. In contrast, health outcomes measured by life expectancy improved immediately after Pinochet's installment, though only slightly. The evidence I present suggests that the remarkable economic growth did not depend on Pinochet's autocracy. Also, the results on life expectancy show that positive health effects may not be an exclusive consequence of democracies.

Chapter two of the dissertation analyzes a massive movement of night watchers or vigilantes' patrols that emerged among the most impoverished indigenous communities in the Andes at the end of the twentieth century to combat terrorism. Northern peasant patrols based their organization on democratic mechanisms while the southern patrols built a hierarchical structure. How does the variation of external threats shape the variation of governance structures and collective responses within extralegal groups? To organize the provision of security and defense against terrorism, these night watchers required mechanisms to control opportunistic behavior and prevent internal predation. This article develops an organizational theory of defense. The time horizon explains why the night watchers produced arrangements in vertical or horizontal forms. Peasant vigilantes depended on hierarchical mechanisms to enforce their agreements if and only if they confronted a short time horizon and a credible external threat. Comparative analysis of the northern and southern Peruvian communities provides empirical support for the theory.

In chapter three, I investigate the role of women within violent organizations. Women play an increasingly important role within insurgencies. This chapter investigates insurgencies' organizational structures and the recruitment of women. I argue that differences in campaigns' structures across insurgencies play an essential role in the recruitment of women. In more hierarchical campaigns, organizations are more likely to recruit women, as incorporating them is less disruptive. When a campaign is consensus-based and organizations anticipate potential internal conflict, they are less likely to recruit women. I evaluate my theory by exploiting a panel dataset on female participation and violent campaigns active from 1945 to 2006 across ninety countries. My results provide empirical support for the main hypotheses.

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INTRODUCTION

Violence is a universal and permanent aspect of human nature. The effects of violence or even the threat of violence extends to multiple aspects that define exchange and choice in particular contexts. This phenomenon shapes the order we observe in the world at different levels, from individuals to organizations and nations. My dissertation, *The Political Economy of Violence and Development in Latin America,* explores the interactions of violence and political and economic institutions. This research is an analysis of historical and contemporary episodes in Latin America. I focus on the institutional processes of this geographical region due to the considerable variety of outcomes that emerged from these interactions.

My research draws on several tools, including econometrics, analytical narratives, comparative institutional analysis, and studies using quasi-experimental designs. My research aims to provide a more thorough understanding of the cartography of the structures of power[1] and violence and a means to improve outcomes of security and development policies. This dissertation is the foundational base of what I expect to become a broader program of theoretical, empirical, and ethnographical research studying two core questions. First, how do external incentives jointly shape governance structures and collective responses to violence? How sensitive are collective organizations and individuals to changes in those incentives? Second, what are the operational mechanisms that determine political institutions in environments where individuals and groups were exposed to violence?

[1] This phrase refers to the Nobel Prize motivation given to Mario Vargas Llosa. His literary work collects some of the most violent episodes in Latin America.

The first chapter examines the impact of Augusto Pinochet's dictatorship on the Chilean economy. We know what occurred with Chile under the ruling of Augusto Pinochet and the systematic violation of human rights. However, we do not know what could have happened with Chile with no Pinochet. This chapter contributes to shedding light on that question by applying the Synthetic Control Method. I compare outcomes under Pinochet's regime with those in a synthetic counterfactual made of a weighted average of countries with similar characteristics. Using a quasi-experimental method, the synthetic-control, I find that, relative to the counterfactual, GDP per capita did not diverge till several years after Pinochet's coup. In contrast, health outcomes, measured by life expectancy, improved immediately after Pinochet's installment, though only slightly. These findings I present suggests that the remarkable "Chilean miracle" did not depend on Pinochet's ruthless autocracy, but arguably the expected transition to democracy served as a credible commitment for the government not to backslide to bad economic policies and consolidated the path of economic growth a decade later.

Chapter two of the dissertation highlights two contrasting systems of governance that emerged among multiple extralegal communities in rural Peru confronting terrorism and crime. I compare and explain the vertical and horizontal organizational structures of these two groups of indigenous villages that scaled up to national proportions. One group, the northern peasantry, confronted crime and ubiquitous cattle rustling. They had democratic arrangements and horizontal separation of powers. Governance decisions and security were coordinated among autonomous patrol units and alternative communal authorities. Although the northern

patrols had limited knowledge on the provision of security, they gradually became capable of responding to violence more quickly by better uses of their local knowledge. The second group, the southern peasantry, confronted terrorism, the Shining Path of Peru. Their structure was hierarchical –the leadership had information about the violence capacity of the patrol units under his command, but it confronted costly oversee of the violent actions affecting their communities, and it became difficult to trust corrective actions implemented at the lower levels or even by alternative institutions within the communities. Even though the horizontal and vertical structures of the communities seem to conflict, both were an effective institutional response to the variation of violent threats.

One binding constraint for growth and development in emerging economies and low-income countries is the effect of violence, both tangible and intangible, especially within minorities or groups with historical constraints. In chapter three, I investigate the role of women in violent political movements. Most of the current research examines the supply-side and attributes the variation of women's participation to particular motivations such as revenge, poverty, religion, or ideological reasons. My research focuses on the demand-side factors by examining the patterns of the insurgencies' structures that encourage women's participation in violent campaigns. In this chapter, I seek to explain the relationship between women's participation and the hierarchical campaigns across different armed groups with political goals. I argue that an insurgency's structure determines the recruitment of women into violent political movements. To estimate the correlation of the presence of

women in violent organizations and considering the binary nature of the dependent variables I exploit logistic regressions.

There is a critical gap between rigorous research and effective formulation of policies to solve conflict, reduce poverty, and identify the patterns of these interactions. Current work in these areas recognizes that threats to global stability emerge from developing countries and require the exploration of unconventional connections across disciplines and organizations. Observing the phenomenon of violence through this institutional, localized, and historical lens can offer valuable theoretical lessons and effective instruments for policymaking. Recent events show that these conflicts plague distant locations; the effects of today's violent conflicts are felt far beyond the borders of the nations where they unfold.

Overall, my dissertation contributes to building a unified theory of economics and politics about the central problem of violence in human nature. Political and economic systems are the institutional responses to the costs that the ubiquitous threat of violence imposes on organizations and countries. My research reflects a continuous attempt to provide insights that can contribute to the intellectual conversation about the most pressing challenges in conflict zones and inform policymakers on how the responses to violence emerge, unfold and persist. Looking forward, my goal is to extend my focus to the underlying sources of violence and how they relate to the emergence of ideas and attitudes, especially within the groups most affected by violence.

CHAPTER I

DID PINOCHET CAUSE THE CHILEAN MIRACLE?

Introduction

Economies such as China, Singapore, Hong Kong, and the United Arab Emirates are often used to support the argument that some top-down regimes may play a critical role in economic growth and social well-being. According to this argument, autocracies with good leaders produce good economic results. Much of this performance could be due to regime stability. Stable political regimes cope better with economic and financial crises, domestic conflict, and civil war. A long-lived autocracy could establish a system of rules that foster growth. According to the findings of Butkiewicz and Yanikkaya (2007), stability can be as important for growth as property rights are, especially in autocratic regimes. Although there is no consensus among scholars regarding the link between regime type and growth, autocracies do display higher levels of variance in growth rates than do democracies (Blaydes and Kayser 2011; Weede 1996). Nonetheless, Easterly (2011) claims that most of the stories of benevolent autocrats are ultimately nonfalsifiable. Consequently, "those with strong priors in favor of benevolent autocrats are still likely to go with that story for any one episode" (p. 46). Augusto Pinochet, who ruled Chile for seventeen years, is a test case for this hypothesis.

Augusto Pinochet is a controversial figure who remained in power for seventeen years, rewrote Chile's constitution, and restructured its economy. Economists tend to attribute the Chilean outstanding performance to the "free market

reforms instituted by the administration of General Augusto Pinochet from 1973 to 1989" (Barro 2010, 22)[2]. However, his regime systematically violated human rights. The Valech Report[3] documented 40,018 victims that were held as political prisoners and tortured. During this time and after, poverty fell, Chile grew economically, investments moved to the country, local industries flourished, and many perceived Pinochet as a hero. Even nowadays, Chileans support political movements that they identified as the heirs of the Chilean strongman (MORI 2015). The violent coup to establish his regime and the subsequent reforms raise the question of whether the reorientation of the Chilean economy and the effects of the economic policies under Pinochet's tenure were due to the characteristics of his vertical leadership. Pinochet's autocracy represents the critical contradiction of the forceful establishment of free markets[4].

I construct a counterfactual by using the synthetic-control method which assesses the effects of Augusto Pinochet's regime on Chile. The paper focuses specifically on economic and social well-being. Chile began the period under examination as a politically and economically turbulent country in the 1960s and 1970s. Shortly after Pinochet's coup in 1973 and during the 1980s, the country began to move in the direction of economic liberalism, while remaining politically repressive (Lawson and Clark 2010). A synthetic control will allow observation of the direct

[2] Political Scientists such Packenham and Ratliff (2007) have also distinguished the role of Pinochet for the Chilean miracle.

[3] The Valech Report (officially The National Commission on Political Imprisonment and Torture Report) was a record of abuses committed in Chile between 1973 and 1990 by agents of Augusto Pinochet's military regime. The initial report was published in 2004. The commission reopened in 2010, adding more cases.

[4] See Klein, 2007 for an extensive critique.

relation of Pinochet's regime to what later came to be known as the Chilean miracle.[5] The Chilean case is significant because of its pioneering economic reforms that preceded reforms in the United States and Great Britain in the 1980s.

In order to investigate the effects of Pinochet's regime, I compare the income per capita and life expectancy of a synthetic Chile with those that occurred under Pinochet.[6] Synthetic chile is a weighted average of control countries that best fit Chile's experience in the thirteen years before Pinochet's coup. On the one hand, the results show that income, measured as real GDP per capita, did not improve significantly more than it would have in the absence of Pinochet's coup till several years later. The positive gap between the control and the treated unit begins in 1988, fifteen years after the introduction of the military regime.

The results for life expectancy, on the other hand, show an immediate effect after the introduction of Pinochet's regime. In this case, the divergence is minor but notable and increasingly significant years later, especially considering that by its nature life expectancy does not change drastically over the short run. The treatment offers only marginal improvements year after year. Thus Chile experienced better health care because of Pinochet's regime than it likely would have without Pinochet. These results contrast with prior findings (Siegle, Weinstein, and Halperin 2004; Wigley and Akkoyunlu-Wigley 2011) that characterize low-income democracies as having a larger capacity to perform better than their autocratic counterparts when it comes to social indicators such as life expectancy.

[5] "Commanding Heights: Milton Friedman." PBS. Retrieved December 29, 2008.

[6] There is not enough data to evaluate inequality. The GINI index measures Chile from 1987 onwards.

This study proceeds as follows. Section 2 provides some background on the Chilean economy and the relevance of the paper's contribution to the literature on leaders and development. Section 3 explains the creation of the synthetic control, and the choice of the control countries. Section 4 presents results on income per capita and life expectancy and analyzes their connection to the treatment. Section 5 offers a robustness check to confirm the results. Lastly, section 6 presents conclusions.

Pro-growth Autocracies

Political Regime and Development

A growing stream of literature attempts to measure the effects of leaders on economic outcomes. Numerous previous studies have highlighted the relationship between economic growth and regime type (Acemoglu and Robinson 2006; Przeworski et al. 2000). For instance, Hall and Jones (1999) explain that differences in institutions and government policies drive capital accumulation and productivity. Similarly, Jones and Olken (2005) address causality between leaders and economic growth, and Easterly and Pennings (2018) evaluate growth and conclude that leaders' qualities do not seem to be determinant. Easterly (2011) enhances skepticism for stories that support priors in favor of benevolent autocrats. Grier and Maynard (2016) address the case of Venezuela and conclude that Hugo Chávez's legacy may have more to do with the harm caused to per capita incomes than alternative positive outcomes. Garcia Ribeiro, Stein and Kang (2013), find that the 1959 Cuban revolution resulted in a drastic change in the country's institutions. Other crucial variables for development, such as property and contract rights, may also improve because of an

autocrat's planning horizon and interest in future tax collection and national income (Clague et al. 1996).

Despite the ongoing march of democracy around the world, how democratic institutions affect human well-being remains open to debate (Besley and Kudamatsu 2006). Boettke (2004) claims that the reason autocracies provide a more efficient mechanism to encourage development is their credible and binding commitment to limiting government predation. If these leaders do not establish and signal a credible commitment to the population, then reform measures will lack trust, and business endeavors will move to the underground economy or to nonproductive activities intended to favor friends of the government (Baumol 1990).

Other studies, such as Gilson and Milhaupt (2011), argue that authoritarian regimes promote the economic success of their countries by taking them into global commerce, whether through formal third-party enforcement or informal government sanctions. Similarly, Holcombe and Boudreaux (2013) find that autocrats whose countries have the highest average annual improvement in economic institutions over their tenures, on average, have the longest tenures. Most of them take steps to improve the quality of their institutions. While these studies focused on differences among autocrats, others have emphasized the differences between autocrats and other leaders. Most findings attribute predatory behavior to autocracies, especially when autocrats accept foreign aid (De Mesquita et al. 2002).

Empirical studies have found democratic institutions and policies to be more supportive of economic progress than authoritarian political regimes. Rode and Gwartney (2012), for example, find that transitions to democracy are associated with

subsequent increases in economic liberalization and growth. Over the long term, they also find democracies achieved larger increases in economic freedom than authoritarian regimes with unstable democratic transitions. Similarly, Persson and Tabellini (2006) explain that stable and persistent democracy has a stronger effect on development than democracy per se. Sanhueza (1999) presents a relationship in which economic development has a stabilizing effect in countries with democratic institutions, while autocracies are not affected by economic development but by popular discontent.

Focusing on developing countries, De Haan and Sturm (2003) find that rises in economic freedom between 1975 and 1990 were caused by the level of political freedom to some extent. Ultimately, an autocracy confronts the need to control its constituents, and given a proper system of incentive payments it could become a sustainable regime (Wintrobe 2012). McGuire and Olson (1996) examine the effects of leaders' incentives, finding that self-interested actors with unquestioned coercive power and encompassing interest have incentives to act in ways that are, to a surprising degree, consistent with the interests of their subjects. Chong and Zanforlin (2004) provide an empirical analysis of Latin America in which they extend encompassing-interest analysis (Olson 1982) to cover psychic income, which includes political stakes along the lines of those described by Coyne (2003), and others.

Billmeier and Nannicini (2013) try to assess the effects of economic liberalization in Chile by using a similar technique to my own and setting 1976 as the treatment period. The pre-liberalization drop in GDP makes it difficult for their synthetic-control algorithm to find a suitable counterfactual. That seems to support my

results. Consequently, I am interested in assessing the effect of Pinochet's autocracy only and not particular reforms introduced during the regime. Ultimately, the effects of the reforms are neither theoretically nor practically connected to the nature of the regime, as the synthetic control will show.

Chile's Takeoff

Chile is known for its pioneering reforms. Currently, it is a highly urbanized, economically stable South American country of roughly ten million people. Like many other countries in South America, after gaining independence in 1818, the country did not enjoy a continuously peaceful transfer of power from one party to another. Democracies and dictatorships alternated through the nineteenth century and the first part of the twentieth century. In 1964, a few years before the introduction of this paper's treatment, Eduardo Frei, the leader of the Chilean government, confronted increasing opposition from socialists, who claimed his reforms were insufficient, and from conservatives, who thought they were excessive. By the time Frei ended his term, he had not fully achieved his party's ambitious goals.

In the 1950s, Chile possessed a fragmented health care system with wide disparities between the poor, rural population and the upper and middle classes. Salvador Allende's Popular Front sought to correct these imbalances by providing universal health care to the Chilean people (Waitzkin et al. 2001). After the coup, among La Junta's first actions was to dismantle the framework Allende had developed. Most state enterprises were privatized along with part of the social security, education, and health care systems.

Several government programs conducted by the National Planning Office protected the Chileans, especially the poor, from the hardships of economic adjustment (A. Soto 2007). The new government committed "to leave the fee-for-service system of payment in SERMENA[7] untouched" (Navarro 1974, 119). Under Pinochet, health care in Chile became less centralized. Allende's National Health Service was replaced by the National Health Service System, which comprised twenty-six independent health services under the Ministry of Health. This new system still provided free health care for the uninsured and low-income workers through the public National Health Fund (FONASA); however, it lacked the benefits of the private health-insurance fund ISAPRE (Castiglioni 2001, 42).

In the 1970 election, Chileans elected as president Senator Salvador Allende (of the Socialist Party of Chile), who became the first socialist president elected democratically in the world. One year later, Augusto Pinochet was named commander of the Santiago Army Garrison. The next year, in 1972, Pinochet was appointed general chief of staff of the army. With increasing internal contention in Chile, Pinochet was appointed commander-in-chief of the army on August 23, 1973, by Allende. The nomination came the day after the Chamber of Deputies approved a resolution claiming the Allende administration had failed to respect the constitution. A few days later, the Chilean military deposed President Allende.[8] On September 11, 1973, the combined Chilean Armed Forces (the army, navy, air force,

[7] The privatized system for health care before Allende's government.

[8] A full analysis of the events and policies of Chile prior to the coup is beyond the scope of this paper, but beyond what is listed in the text, Pinochet advanced his regime through systematic violation of human rights. However, he called for elections in 1990 after losing a referendum.

and *carabineros*[9]) overthrew Allende's government in a coup, during which the presidential palace, La Moneda, was shelled and Allende committed suicide.[10] A military junta was established following the coup and exercised both executive and legislative functions of the government. Congress and the constitution were immediately suspended. Following that, the junta imposed strict censorship and restrictions, banned all parties, and halted all gatherings and protests.

By 1973, numerous factors were affecting the Chilean economy, including the massive expropriation of businesses by Allende's government, price controls, and protectionist policies. Inflation was 600 percent, foreign reserves had been depleted, and GDP was rapidly decreasing (A. Soto 2007). Around 1975, the government set forth an economic policy of economic reforms that attempted to stop inflation and economic collapse. The Pinochet autocracy relied on a text informally called *El Ladrillo* (The brick), which had been written before Pinochet's coup by economists who would hold relevant posts at the National Planning Office later (A. Soto 2007). Much of their intellectual work had been advanced in previous years. *El Ladrillo,* a 189-page document whose formal name can be translated as "Program for economic development," had been presented in 1969 as part of Jorge Alessandri's unsuccessful presidential candidacy. Many of the policies were advocated by the "Chicago Boys," the group of economists that attended the University of Chicago under the influence of Milton Friedman and Arnold Harberger. When Pinochet's regime was installed after

[9] The *carabineros* are the police force in Chile.
[10] Development and Breakdown of Democracy, 1830–1973. http://countrystudies.us/chile/85.htm

the military removed President Allende, the voice and influence of the Chicago Boys became increasingly more evident (A. Soto 2007).

It is imperative to notice the events before the treatment to understand how challenging is to construct the counterfactual. During the Unidad Popular government (1970–73), the state assumed a dominating role in the economy by controlling prices, interest rates, credit, and capital movements. President Allende's government encouraged expansionary fiscal policies, including a sharply rising public payroll, which meant a hefty increase in the budget deficit, on the order of 20 percent of GDP in 1973 (Billmeier and Nannicini 2013). According to Pinera (2005), before Pinochet's coup, there was a chaotic succession of events that created general misery and malaise. For Chileans, those days meant rationing, hyperinflation, scarcity of essential goods, large fiscal deficit, unemployment, and so forth (p. 22).

In economic matters, the Chilean military, like many of its Latin American counterparts, favored a more significant government role (A. Soto 2007). However, after a struggle inside the government, Pinochet opted for the liberal model advocated by the Chicago Boys, moved by their technical know-how and their sound economic theory (A. Soto 2007). Besides the removal of price controls, Chile increased trade by eliminating nontariff barriers to imports and reducing tariffs in general. The new policies created a capital market and liberalized foreign investment. Additionally, the regime established the independence of the central bank. Another critical measure was the introduction of flexibility within labor markets: entry barriers were eliminated for most jobs, and government intervention in private negotiations was restricted.

Notably, even though nowadays Chile is one of the leading producers of copper, the production boom did not start until the late 1980s.[11]

Pinochet also perpetrated multiple waves of human-rights violations, which included torture of opposition leaders and kidnapping. As a typical strongman, Pinochet centralized power in the presidency, but the regime also produced extensive reforms in the economic realm. Therefore, according to the substantial research linking institutions to growth, the reforms under Pinochet's autocracy should affect the Chilean economic and social performance over the whole period. Still, how relevant the characteristics of the political regime were in the direction of the change remains a question to be answered. Importantly, Pinochet is considered by many as a pro-growth autocrat who improved the lives of average Chileans (MORI 2015). However, his regime is considered by many others as one that severely violated human rights and damaged the Chilean economy (Petras and Vieux 1990). This discussion suggests the need for establishing a convincing counterfactual to assess this autocracy correctly.

A Synthetic Control for Chile

Methodology

Abadie, Diamond, and Hainmueller (2010) developed the synthetic-control method in order to test the effect of terrorism in the Basque Country. Later, the method was applied to the economic effects of German reunification (Abadie, Diamond, and Hainmueller 2015), affirmative action (Hinrichs 2012), natural disasters (Cavallo et al. 2013), and additional analysis of terrorism (Gautier, Siegmann, and Van Vuuren 2009; Montalvo 2011) among others. The method creates a synthetic

[11] There was however some growing production after 1981 with new legislation aimed to encourage exploration.

counterfactual, which is a weighted average of control donors with similar conditions, by using pre-treatment data. The synthetic-control design serves to track pre-treatment outcomes and to match the treated unit on the values of several indicator variables as well.

A frequent problem in exploring the relationship between political regimes and the economic results often attributed to leaders is the absence of a counterfactual for each case. The ability of the synthetic-control method to choose comparison units in comparative case studies and to obtain accurate quantitative inferences (Abadie and Gardeazabal 2003) makes it an ideal analytical tool for this purpose. This paper empirically evaluates the effect of Pinochet's regime on Chile's economic and social well-being using what few data are available. It constructs a consistent counterfactual to Chile under Pinochet to assess the impact of his regime on the performance of the Chilean economy toward the end of the twentieth century.

The Control Countries

For Abadie and Gardeazabal (2003), the efficacy of the synthetic-control technique depends on the choice of countries: they must have similar economic and institutional characteristics to the country with the treatment. To capture similar conditions on culture, history and geography, I use most of the Latin American nations for the overall analysis. Besides these countries, the control includes Spain and Portugal, which had similar political conditions during the period under analysis and share a cultural connection with Chile, given their past as colonizers of most Latin American countries. I examine two outcome indicators: per capita income and life

expectancy. Table 1.2 includes the list of countries for each synthetic-control analysis, along with their weights assigned. In total, I consider eighteen control countries as donors and a period of thirty-five years. I limit the donor pool to countries with similar processes to the treated country. Conveniently, there are available data for every year for the two synthetic controls.[12]

The role of the predictors is to capture the similarity of processes between donor countries and Chile during the pre-Pinochet period. The synthetic control method selects those countries where the relationship of the predictor and the outcome is more similar to the relationship in the case of Chile. Therefore, through the algorithm, I use time-invariant indicators and minimize the difference between the weighted average of these indicators for the synthetic counterfactual and the indicators for Chile. The units that present a closer approximation to the indicator variables of Chile will obtain a higher weight in building the counterfactual. The algorithm also places more value on predictors that have a similar influence over the outcome variable. Table 1.1 summarizes the sources and predictor variables used for the construction of the controls.

[12] In order to capture the historical copper production in Chile, I use most of the main copper producers with available data during the research period. I consider an expanded dataset of countries compared to the restricted sample in Appendix A.1

Table 1. 1 Data and Sources

Variable	Countries	Years	Source
Life expectancy, 1960–88	18	28	World Bank (2013)
GDP per capita, 1960–88	18	28	
Avg. pop. growth, 1960–73	18	–	
Investment share, 1960	18	–	
Investment share, 1972	18	–	Penn World Table v7.0
Government share, 1960	18	–	Heston, Summers, and Aten (2011)
Government share, 1972	18	–	
Openness, 1960	18	–	
Openness, 1972	18	–	
Polity II, 1960	18	–	
Polity II, 1972	18	–	
Exec. constraints, 1960	18	–	Polity IV dataset
Exec. constraints, 1972	18	–	Marshall and Jaggers (2005)
Durability, 1960	18	–	
Durability, 1972	18	–	
Avg. yrs. of school, 15+, 1960	18	–	Barro
Avg. yrs. of school, 15+, 1972	18	–	and Lee (2010)
Avg. yrs. of prim. school, 15+, 1960	18	–	
Avg. yrs. of prim. school, 15+, 1972	18	–	
Adolescent fertility rate, 1972	18	–	Health of Nations Dataset
Crude birth rate, 1972	18	–	World Bank (2011) WHO (2013)

The Synthetic Controls for Per Capita Income and Life Expectancy

For both controls, per capita income and life expectancy, I removed potential donor countries such as El Salvador and Paraguay[13] because of data availability. The method requires indicator variables that are known to be good predictors of the outcome variable. For GDP per capita, the control considers income indicators from four pre-Pinochet years (1960, 1965, 1970, and 1972).[14] The average population growth rate from 1960 to 1973 also contributes to the results, as do openness to trade in 1960 and 1972, both indicators from the Penn World Table, and two educational-attainment variables in 1960 and 1970 from the Barro and Lee (2010) database—

[13] Only for the GDP per capita control. Paraguay remains for the Life Expectancy Control.

[14] Controlling for different years does not change the essence of the results, nor their significance. The study uses 1960, 1965, 1970, and 1972.

specifically, the average years of primary and total school attendance. Grier and Maynard (2016) use similar indicators to assess Hugo Chávez's effect on the Venezuelan economy.

For the synthetic control on life expectancy, this study uses predictors such as data on fertility and crude birth rates[15] in 1972 from the World Health Organization. Also, this control includes investment and government share for 1960 and 1972 from the Penn World Tables (Aten and Heston 2011). In addition, the control considers a set of variables related to the political process such as Polity II and, from the Polity IV dataset, executive constraints and durability of the regime for both 1960 and 1972 (Marshall and Jaggers 2007). The results from executing the algorithm for both synthetic controls, and the corresponding errors, are shown in table 1.2.

Table 1. 2 Estimated synthetic-control weights for each outcome variable

	Outcome variables	
	Income	Life expectancy
Argentina	**3.20**	0.00
Bolivia	0.00	0.00
Brazil	0.00	0.00
Colombia	0.00	0.00
Costa Rica	0.00	**23.2**
Dominican Republic	0.00	0.00
Ecuador	0.00	0.00
Guatemala	0.00	**21.8**
Honduras	0.00	0.00
Mexico	0.00	0.00
Nicaragua	0.00	0.00
Panama	**53.2**	0.00
Paraguay	--	**5.40**
Peru	0.00	0.00
Portugal	0.00	0.00
Spain	0.00	**5.60**
Uruguay	**43.60**	**0.10**
Venezuela	0.00	**43.8**
Model fit pre-intervention		
RMSPE	0.096	0.037

Note: Columns show the weight assigned to each country in the synthetic controls for Chile.

[15] The OECD define crude birth rate is the number of live births happening among the population of a specific geographical area during a specific year, per 1,000 mid-year total population of the specific geographical area during the same year.

Results Analysis

This section offers an analysis of the estimates obtained through the synthetic-control method of the causal impact of Augusto Pinochet's regime on GDP per capita and life expectancy in Chile. These estimators do not disentangle direct and indirect underlying effects of the Pinochet's regime. Accordingly, they do not involve any specific subsequent policies or consequences of the regime. The controls assess the overall performance of the Pinochet effect on the Chilean economy. It is important to notice the particular conditions prior to Pinochet's coup and during the democratic transition that took place between 1988 and 1990, when Pinochet left the government. With this consideration in mind, the analysis of Pinochet's regime and its relationship to economic growth and quality of life is feasible.[16]

Results on Per Capita Income

Synthetic Chile serves as a representation of actual Chile with no Pinochet, and I seek to see whether outcomes (per capita income, specifically) under Pinochet's regime deviate from this counterfactual and if so in what direction and the relevance of the magnitude. The control matches the real outcomes closely for the previous thirteen years in the predictors I have selected. Below, figure 1 plots a comparison between actual and synthetic Chile both over the pre-Pinochet period. As can be seen, synthetic Chile tracks closely actual Chile during the events before the treatment, which provides a visual indication that the control has been correctly created.

[16] I consider alternative specifications, dropping all the donors that were assigned a weight, and using alternative sets of predictors. My conclusions are similar to those presented here. I discuss these robustness checks in the Appendix.

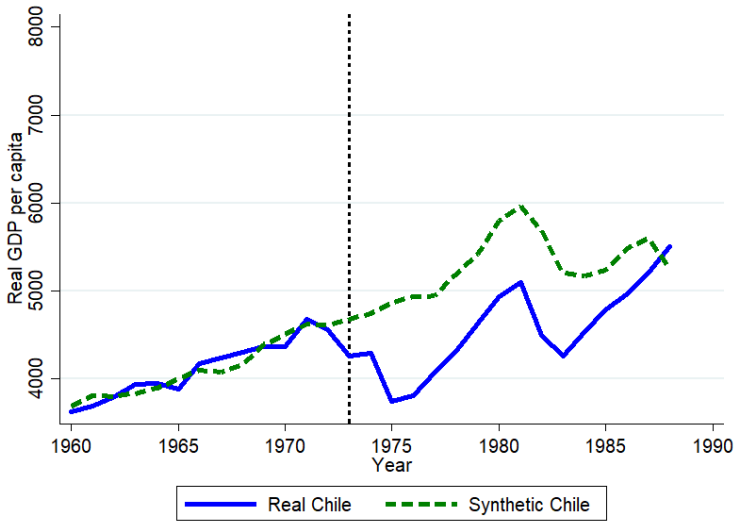

Figure 1. 1 GDP per capita. The solid line represents observed per capita income in Chile, 1960–88; the dashed line represents the synthetic control for the same period.

Only three of the seventeen potential donors tested as controls for the construction of synthetic Chile received a weight greater than zero: Argentina (3.2 percent), Panama (53.2 percent), and Uruguay (43.6 percent). Table 1.3 reports the pre-Pinochet values of the predictors for both actual Chile and the synthetic control. Each value is close to its corresponding indicator, which reflects an appropriate match in the pre-treatment period. The model fit pre-intervention root-mean-squared percentage error (RMSPE) is 0.096. The most significant divergence between real and synthetic results was Openness. This outcome is expected since since the donor that received the largest weight for synthetic Chile was Panama, which distinctive openness indicator is strongly related to the unique condition of having the Panama Canal.

Table 1. 3 Indicator fits, GDP per capita

Variables	Actual Chile	Synth. Chile
Avg. GDP per capita	4037.13	4218.48
Pop. growth rate	2.10	1.97
Openness, 1960	29.17	67.91
Openness, 1972	23.06	74.87
Total ed., 15+, 1960	5.22	4.75
Primary ed., 15+, 1960	3.98	3.83
Total ed., 15+, 1970	6.09	5.46
Primary ed., 15+, 1970	4.46	4.12

Note: Table shows the values of indicator variables and the average pre-Pinochet outcome variable for actual Chile and synthetic Chile.

Though Panama, Uruguay and Argentina had military regimes as most of the Latin American countries during the 1970s, they differ from the Pinochet's regime on the political transition and the particular characteristics of Chile before the Pinochet's coup. Many of the reforms during the Pinochet's regime were also ground-breaking in the world. Then Chile under Pinochet became "the first country in the world to make that momentous break with the past- away from socialism and extreme state capitalism toward more market-oriented structures and policies" (Packenham and Ratliff 2007). Then what Uruguay, Panama and Argentina experienced during the treatment period was closer to the regular political and economical behavior of most of the countries in Latin America during that context.

After the introduction of the treatment, one can notice a widening gap between both series. At 1973, the trajectory of the synthetic GDP per capita begins to outmatch the series of actual Chile. By 1975, Chilean per capita income is almost $1500 below that of synthetic Chile, and the gap remains around $1000 in all following years until 1983 when the gap narrows. This divergence would mean, at first glance, that Pinochet's regime had a negative impact on the country's GDP per capita. From 1973

onwards, it is clear that synthetic Chile experienced higher growth rates of GDP per capita at least until 1988, fifteen years after the treatment.

Results in Life Expectancy

Beyond the economic growth of Chile, the other vital dimension on which to evaluate the effect of Pinochet on the Chilean economy is life expectancy, which should provide a good overall indicator of social well-being. The second synthetic control examines this indicator. The effect of Pinochet's regime on health outcomes is given by annual observations from the period 1960–88. Again, countries with more reliable data are considered as well as the countries with similar institutional conditions. Consequently, the eighteen control countries for life expectancy are the basically same as those for the income per capita control. The configuration of the synthetic control on life expectancy is shown in table 1.4.

Table 1. 4 Indicator fits, life expectancy

Variables	Actual Chile	Synth. Chile
Log GDP per capita	3.5599	3.6704
Inv. share 1960	0.1224	0.2289
Inv. share 1972	0.1041	0.2307
Gov. share 1960	0.1818	0.1814
Gov. share 1972	0.2102	0.2232
Polity II 1972	6	5.653
Exec. constraints, 1972	5	5.019
Durability, 1972	17	17.738
Polity II, 1960	5	2.988
Exec. constraints, 1960	4	4.583
Durability, 1960	5	13.204
Adol. fert. rate, 1970	87.888	110.639
Crude birth rate, 1970	29.6	36.817

Note: Table shows the values of indicator variables and the average pre-Pinochet outcome variable for actual Chile and synthetic Chile.

Figure 2 shows that the synthetic counterfactual captures the pre-Pinochet performance almost precisely and the post-Pinochet period presents a notable effect of Pinochet's regime on life expectancy. The graph shows that both the actual and the synthetic trajectories of Chile's life expectancy are quite similar. After applying the algorithm, the synthetic control consists of Costa Rica (23.2 percent), Guatemala (21.8 percent), Paraguay (5.40 percent), Spain (5.60 percent), Uruguay (0.10 percent), and Venezuela (43.8 percent). The root-mean-squared percentage error for the pre-intervention fit (RMSPE) is 0.037.

The divergence starts at the year of the treatment, and although it is not dramatic, there is a discernible but small effect of Pinochet's regime on life expectancy, the gap becomes wider over the following years. Chile's life expectancy roughly increases at a greater rate than the control. By the end of the period under study, Chilean life expectancy is almost four years higher than what is predicted by the synthetic counterfactual. These results provide evidence of the change in health care that occurred immediately after Pinochet reached power in Chile.

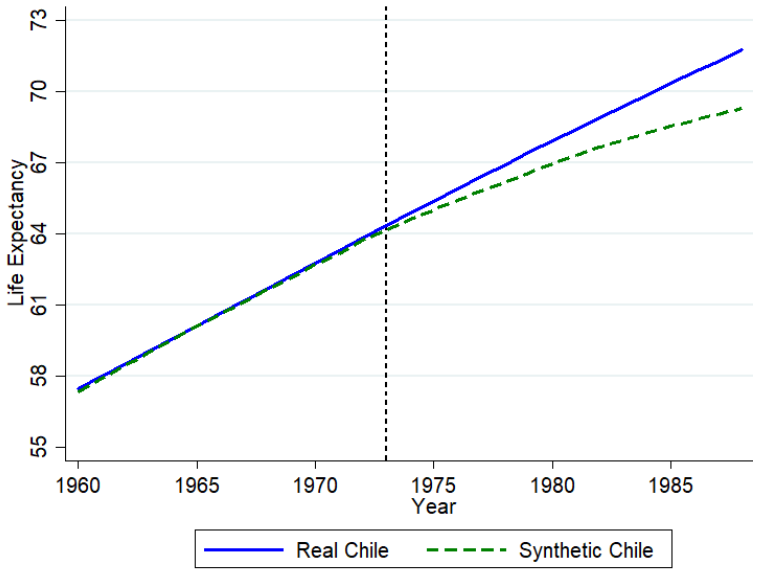

Figure 1. 2 Life Expectancy. The solid line represents observed life expectancy in Chile, 1960–2010; the dashed line represents the synthetic control.

Inference Tests

The synthetic-control methodology allows me to conduct inference tests to increase confidence in the results. It is possible to offer information about the statistical significance of the findings in the former section. The matching in figures 1 and 2 presents a good indication that the methodology was executed well and a suitable counterfactual was constructed. Additionally, the methodology allows me to conduct in-time and in-place placebo tests to increase the confidence in the results (Powell, Clark, and Nowrasteh 2017). In this particular case, the in-time placebo is not suitable because there are no available data to maintain a similar level of observations before the treatment year. So, it is more convenient to use a placebo on the geographical location that will simulate a control for each of the other countries of the control. The in-place placebo test will serve to increase the confidence that the departure from the performance of synthetic Chile stems from the Pinochet treatment

rather than a general deterioration in the predictive power of the synthetic counterfactual. The placebo produces a synthetic version of each control country that did not experience the Pinochet effect. It tests whether the difference between the control and its corresponding synthetic version after 1973 is more significant than the difference in Chile.

Confidence in the result that Chile's per capita income was affected by Pinochet's autocracy would be weakened if the magnitude of the in-place effect was similar for Chile and other countries. Figure 3 illustrates the synthetic-control method in every country in our sample. The result shows that Chile does not have consistent growth in income per capita after Pinochet's coup. There is a change in the trend years later, which may refer specifically to the establishment of broader liberalization reforms or other variables besides the political regime. It is also notable that the control under analysis, Chile, has a very noticeable change after the introduction of the treatment, unlike most of the other control countries, which don't have a similar performance after 1973.

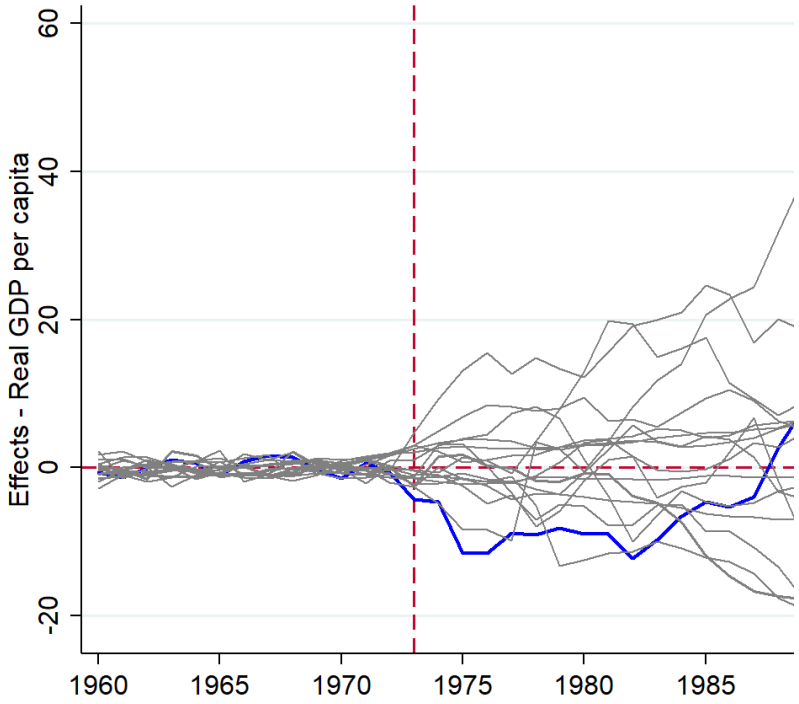

Figure 1. 3 GDP per capita placebo tests. The blue line represents the difference between observed income in Chile, 1960–88, and the synthetic control; the synthetic control is normalized to zero. The graph shows placebo tests (light blue lines) for all other countries in the dataset.

To increase the robustness of the analysis, the synthetic-control method enables the calculation of a significance level (p-value) for the estimated Pinochet impact. It is a modified version of the method presented by Cavallo et al. (2013); see also Absher et al., (2018) for an application of the method. The process considers the absolute value for each period's treatment effect and ranks it among the absolute values of the period's placebo effects. The number of placebos with a more extensive estimated effect divided by the total number of placebos provides the p-value for each post-treatment period. This calculation evaluates the effect and the evolution of statistical significance over time. Therefore, the execution of the algorithm considers all countries, treated and donors, but it is important to notice that those countries with

a poor fit in the pre-treatment period are more likely to present more substantial deviations in any post-treatment period.

Figure 4 shows the results of the calculations of the p-values with the placebo averages. This evidence and the initial results on the synthetic counterfactual provided in section 4 suggest that Pinochet's autocracy caused a statistically significant *decline* in GDP per capita. The decline was consistent during the first ten years after the coup. The control shows a reverse in the direction of GDP per capita around 1983, and it presents significant results in the final years of the post-treatment period. The confidence of the results questions the relevance of Pinochet for the increase of income per capita that Chile experienced at the end of the 1980s, or at least it questions the story of a pro-growth autocracy in Chile. The confidence of the results may suggest that the economic growth in Chile depended much more on other variables than the introduction of the autocracy.

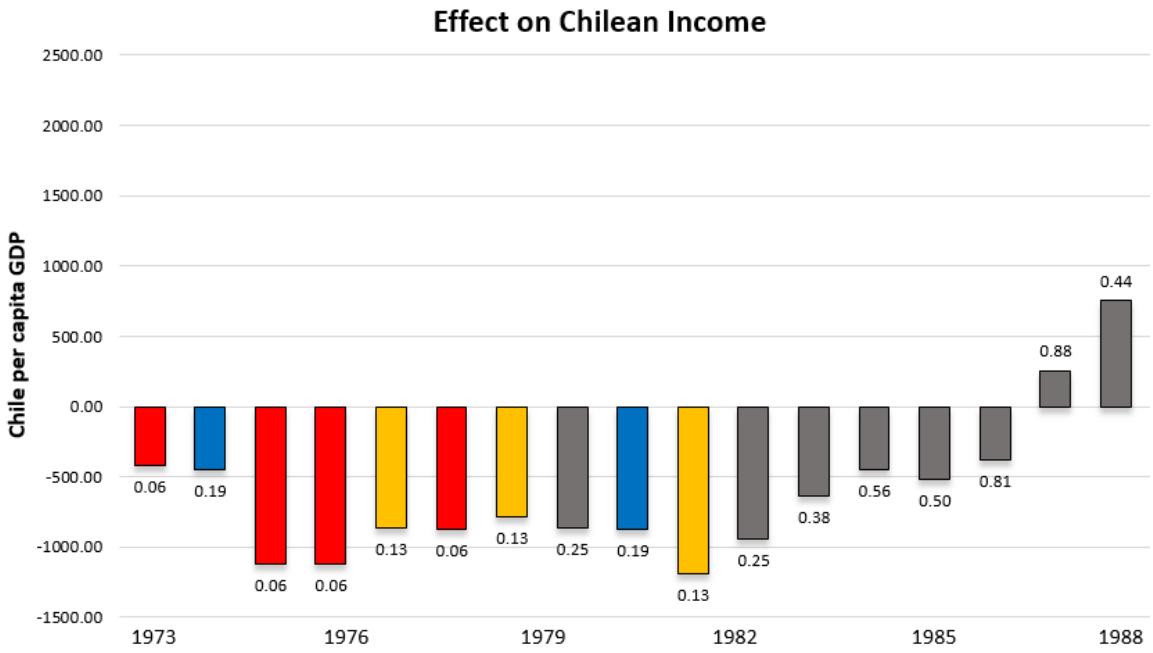

Figure 1. 4 Significance for each period upon GDP per capita. This figure shows the estimated treatment effect upon per capita GDP for each period following the Pinochet treatment. Effects in red are significant at the .06 level, effects in yellow are significant at the .13 level, effects in blue are significant at the .19 level. Effects in grey are insignificant.

Regarding the social outcomes, synthetic Chile consistently obtains higher life expectancy throughout the post-intervention period. However, the divergence is not extensive, even though the improvement is almost immediately noticeable. These results are expected considering the nature of the variable. The changes in life expectancy tend to be relatively small since the period under analysis is short. Figure 5 shows the placebo tests with all the eighteen countries for the results on life expectancy. Just like the tests on income per capita, the placebo tests use all countries. Compared to other donor' synthetic controls, the control for Chile is reasonably accurate during the pre-Pinochet period.

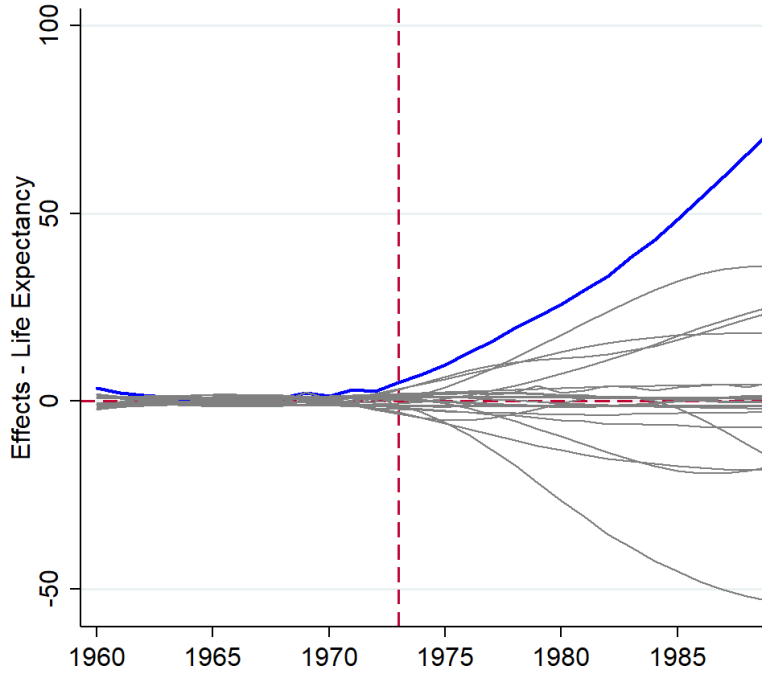

Figure 1. 5 Life Expectancy placebo tests. The blue line characterizes the difference between the observed life expectancy in Chile, 1960–88, and the synthetic control; the synthetic control is normalized to zero. Gray lines represent placebo tests—i.e., deviations from the synthetic control for the other countries in the dataset.

The calculation of the p-values for the synthetic-control results in life expectancy follows the same process as that for income per capita. There are eighteen donors in this case, and there is one single event: Pinochet's autocracy. Likewise, the algorithm calculates eighteen placebo averages to compute each p-value. The results are shown in figure 6. They confirm the results obtained with the synthetic control presented in figure 2 by providing a significant statistical increase in life expectancy for every year after the introduction of Pinochet's autocracy.

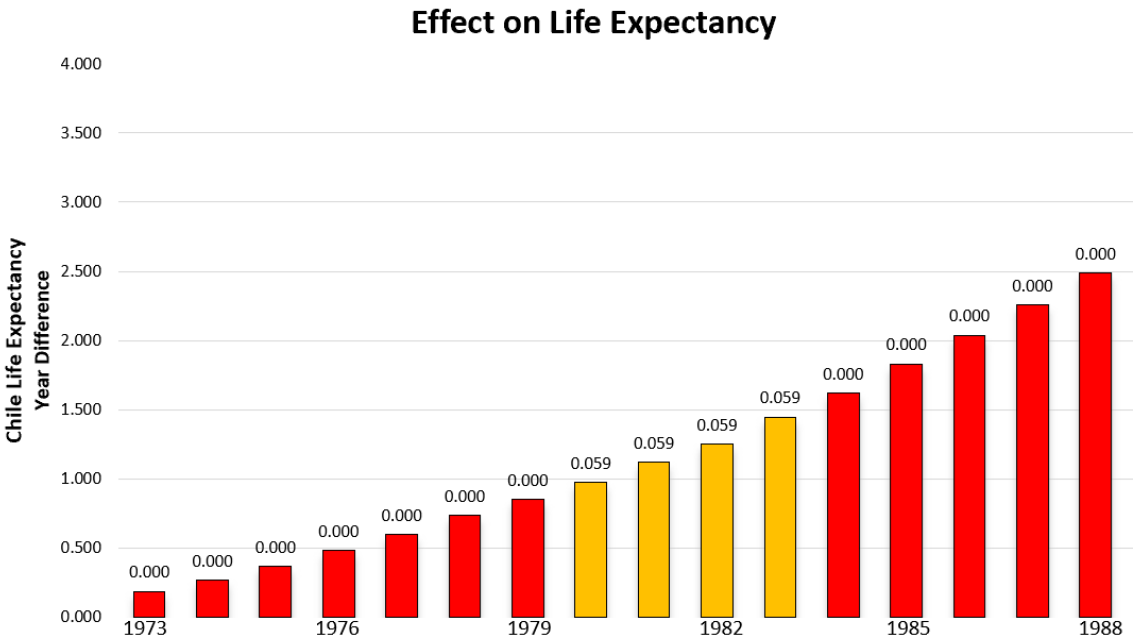

Figure 1. 6 Significance for each period upon Life Expectancy. This figure shows the estimated treatment effects upon life expectancy for each period following the Pinochet treatment. The y-axis shows the difference in years between the synthetic control and the real Chile. Numbers above each bar display the p-value for each period. Effects in red are significant at the < .0001 level, effects in yellow are significant at the .06 level.

Conclusion

Pinochet's autocracy does not seem to have had a decisive positive effect on per capita income, at least when La Junta took power in 1973. Rather, it seems the turbulence caused Chile to perform worse than it would have had Allende remained in power. The findings support other empirical analysis such as that of Easterly and Pennings (2018). For them, the stories about benevolent autocrats, or even autocratic systems, have not resisted the analysis in the contemporary literature. In this view, the relevance of Pinochet's autocracy to more substantial economic growth is overrated. Carden and Lawson (2010) find a similar trend in their studies. Human-rights abuses reduce rather than accelerate the pace of economic liberalization. Indeed, a cross-

country analysis shows that more economic freedom and globalization encourage government's respect for human rights (Dreher, Gassebner, and Siemers 2012).

There is no noticeable positive difference resulting from the political regime per se. The synthetic-control evaluation of the Pinochet effect supported the claim that regardless of the conditions of the political regime, stable polities promote growth (Butkiewicz and Yanikkaya 2007). If society can remove obstacles to the entrepreneurial spirit and unleash the market process, the results are similar most of the time. The presence of autocracy seems to have a secondary role if, as in the Chilean case, there is a will to eliminate hindrances to increasing the quality of institutions and allowing more extensive space for the market in public policies. Synthetic-control methodology allowed us to test this assertion by producing a counterfactual in the case of Pinochet's regime and Chile's economic growth.

The results on life expectancy, which represent the social aspect of the Chilean economy under Pinochet, showed a positive influence of the autocracy. A small divergence expanded progressively from 1973 through the post-treatment period. My results coincide with Tapia Granados (2010) who found that longevity increased faster under right-wing autocracies in southern Europe than under social democracies in the Nordic countries. In contrast, Besley and Kudamatsu (2006) find a robust correlation between democratic institutions and higher life expectancy. This prevailing thesis argues that democratic regimes allocate health-conducive resources more widely than their autocratic counterparts do. My article does not attempt to challenge this thesis. Instead, it may serve to contribute to a broader explanation of the health effects of regime type.

Studying the Glorious Revolution in England, North and Weingast (1989) examined the political factors underpinning economic growth focusing on both the rules governing economic exchange and the institutions governing how these rules were enforced. The degree to which the regime was committed to or bound by these enforcement rules determined the economic growth and the development of markets. Even though I have not tested this hypothesis in the case of Chile during the Pinochet's regime, my results are consistent with it. After the 1973 coup, the Chilean government undertook widespread economic reforms. Later, in 1980, Chileans approved a new constitution, which scheduled a referendum for 1988, in which voters decided if Augusto Pinochet should remain in power until 1997 or not. The "NO" won the referendum and Pinochet accepted the results. A joint Presidential and Parliamentary election took place the following year. Like early modern England, it is possible the expected transition to democracy served as a credible commitment for the government not to backslide to bad economic policies. Prior to the presidential election of 1989, the Pinochet's regime and the opposition agreed to fifty-four modifications to the Constitution that expanded political rights but maintained the economic reforms (Uggla 2005). These changes could reflect an attempt to make credible the government's ability to continue the path to economic growth.

CHAPTER II

NIGHT WATCHERS AND TERRORISTS

Introduction

Peru suffered at the hands of the most violent faction of the communist revolution in the Western hemisphere: the Shining Path. The group perpetrated numerous acts of violence during the 1980s and 1990s in its attempt to overthrow the Peruvian government. Surprisingly, one of the most effective responses to this problem came from the Peruvian peasantry. Thousands of peasant vigilantes organized themselves to fight back against the Shining Path despite their financial limitations, illegality of their operation, and lack of experience. While the organizational structure of criminal and violent groups has been increasingly documented (Gambetta 1996; Wintrobe 1990, 1998; Leeson and Skarbek 2010; Skarbek 2011, 2012a, 2014), the causes of variations in the internal structure of these organizations are still unclear.[17]

The cultural diversity of the rural communities in Peru, the violence produced by terrorism and the government's response to it offer an extreme context in which to examine such internal variation. For this reason, my study examines the internal institutional arrangements of the Peruvian peasantry that made it possible for them to enforce agreements, provide order, and combat terrorism successfully. I refer to the villagers who organized into patrols as "night watchers."[18] I describe them as

[17] One important paper that does provide a theory on the internal variation is Leeson and Rogers (2012).
[18] I use the terms "patrols" and "vigilantes" equivalently.

"extralegal" but not "criminal" organizations as long as they emerged outside the legal system, were not profit driven, and did not engage in systematic criminal offenses.[19]

Two internal structures were erected by multiple indigenous communities to defend themselves from terrorism and crime. My objective is to compare and explain their organizational structures and their responses to violence. One organizational structure observed in the North was horizontal: decisions on governance and security were democratic. Villagers delegated security to patrol units that took shifts to protect the community. Most agreements were made collectively, and their enforcement was assigned to smaller committees within the community. Despite having no previous experience in providing security, the patrols gradually became capable of responding to organized criminal actions.

By contrast, the organizational structure found in the South was hierarchical: The leader had autocratic authority over multiple patrol units under his command. The vertical structure was a response to the costly oversight of growing oppportunistic behavior and violent actions affecting the communities—mostly, terrorist acts. It became difficult for the leader and villagers to trust actions taken at lower levels or even by other institutions within the communities. The leader's authority increasingly prevailed over all traditional institutions, and his control extended to all aspects of life within the community.

Examining the organizational variation of the night watchers in Peru provides two benefits for understanding civil reactions and counterterrorism. First, despite not appealing to government for enforcement, villagers formed thousands of patrols.

[19] See Paoli and Vander Beken (2013) for a discussion on the definition on the term "organized crime."

Throughout the country, 400,360 patrol members formed 5,786 patrol[20] units (Degregori et al. 1996, 24), although most of them located in Ayacucho[21] and neighboring regions. In the face of pervasive potential for opportunistic behavior, night watchers created mechanisms that facilitated cooperation and coordination. Second, even though the horizontal and vertical structures of the various communities differ, both were institutional responses to external threats, and in both cases, the Peruvian peasants attained a high degree of success. Although this study does not focus on their effectiveness and growth, it is worth noting that the Peruvian government ceased its initial animosity toward the night watchers, praised their actions, and ended up supporting their expansion by incorporating their organizations through Peruvian legislation (Legislativvo 1992).

Some past research on the economics of crime[22] has focused on the relevance of governance institutions within criminal organizations (Leeson 2007a, 2007c; Leeson and Skarbek 2010). For Leeson and Rogers (2012), market structure determines these governance institutions. The differences in contestability across criminal industries shape the organization of producers in those industries. In more contestable criminal industries, producers use hierarchy to enforce collusion and preserve their returns. In the less contestable criminal industries, however, hierarchy becomes costly and producers organize horizontally instead. In fact, Leeson (2007a) documents the high startup costs of the Caribbean pirates that led them to organize

[20] These numbers included many but not all of the northern patrols that emerged before the Shining Path in the south. This information was provided by General Cano and quoted by Tapia (1995)

[21] Ayacucho was the operational center of the Shining Path and where most of the violence occurred.

[22] There is an extensive literature that models criminal organizations as competitors of government (Alexeev, Janeba, and Osborne 2004; Skaperdas and Syropoulos 1995). It also extends to a broader literature on private ordering (Benson 1989; D'Amico 2010; Leeson 2015, 2007b; Powell and Stringham 2009).

democratically. On the other hand, Gambetta (1996, 2009) has provided evidence on the low-cost production of private protection by the Sicilian Mafia, which encouraged its hierarchical organization. Other researchers have also considered the internal-governance aspects of organized crime (A. Anderson 1995; Reuter 1983; Gambetta 1996), as well as street gangs (S. Levitt and Venkatesh 2000), and prison gangs (Leeson and Skarbek 2010; Skarbek 2011, 2016).

This article extends the literature by focusing on variation in the internal organization of the communities as responses to variation in external threats. The first contribution of this paper is to show *how* the Peruvian peasantry adopted different structures to confront life-threatening problems despite their fundamental constraints. Effectiveness in the face of both the terrorist groups and the initial hostility of the army and the police indicates the robustness of these structures. The second contribution of this article is to explain *why* the night watcher structures prevailed over outside attempts to establish a hierarchical structure within all the communities. The study answers the following questions: How do external incentives jointly shape governance structures and collective responses to violence? How sensitive are collective organizations to changes in those incentives? And how do vertical and horizontal organizations cope with opportunistic behavior and deliberation costs?

Because the patrols examined in this study evolved dramatically, and operated extralegally, data on these patrols tend to be dispersed and unconnected. To overcome this limitation, this study examines a variety of primary sources, including booklets created by the peasant patrols and legal documents produced by the Peruvian Congress before the Night Watchers were legalized, interviews, archival evidence, and non-

governmental reports. In addition, it draws upon studies by scholars in other fields—including sociology, history, and anthropology—that attempt to explain the nature and purpose of the Night Watchers. Although each of these studies offers a different perspective on the Night Watchers, describing features of the Night Watchers that the others do not, most focus on why the Night Watchers emerged, their ideological roots, and their cultural environment. While this paper benefits from these studies, it differs from them in presenting a comparative institutional analysis of *how* the Night Watchers operated.

Importantly, the article also relies on the research and conclusions of the Peruvian Truth and Reconciliation Commission's (TRC) extensive 2003 report. This government commission produced a comprehensive report based on a reconstruction of the violent period. Its work focused on establishing responsibility for human rights violations from 1980 to 2000.[23] Additional documents were employed as well, and were provided by the Peruvian media and the army, the Peruvian legislation that formalized many of the patrol agreements, and transcriptions of the meetings and statements of terrorist leaders. Finally, I use the valuable firsthand accounts of several local scholars that produced field research on the towns most affected by terrorism and crime (Del Pino 1992; Degregori et al. 1996; Coronel 1996). I particularly lean on the ethnographic research of Orin Starn, who worked for many years in Peru and produced several books about the organizations involved in the conflict. His research

[23] Thirteen commissioners were appointed to the commission. It was well endowed, with a total budget of about $19 million, and it recruited academics and professionals during its operational years. One of the main tasks of the TRC was to travel around the country holding public hearings during which it gathered statements from victims, relatives, witnesses, and survivors of the conflict.

recounts the history of the events surrounding the night watchers of both the North and the South.

Communities in the Context of Violence

During the second half of the twentieth century, people in rural Peru lived predominantly in peasant communities whose economic and social orders were rooted in diverse cultural patterns, collective ownership and the use of private resources based on reciprocity (Olano 2001). 90% of these communities were located in the highlands (Smith 1994, 17). In 1989, Peru featured 83 of the 103 types of ecological zones, and 40% of its total population and 90% of its rural population lived in three ecological zones (Smith 1994). Using his index of cultural fractionalization, Fearon (2003) argues that Peru is the second-most diverse country in the region because of its large indigenous population in which the levels of ethnic fractionalization (0.638) and cultural fractionalization (0.506) are both above average. Alesina et al. (2003) found a similar second position for Peru in a diversity measure that included, language, race, and religion. In 1994, near the end of the terrorist conflict, 5,168 Peruvian communities incorporated two million people and owned a total of thirteen million hectares of land plots (Olano 2001).

A typical peasant community was made up of several families. These communities were spread throughout the territory in various geographical conditions and cultural settings. Some villagers had a deeper connection with and knowledge about the urban areas than others. Some communities were closer to warm valleys and rivers, while others were located in higher elevations where it is cold and dry. Despite

the rough geography in the mountains and elevations up to 12,500-feet, there was agricultural production; the common crops were potatoes, corn, grain, and beans. Peasant communities also raised alpacas, llamas, and vicunas. Most of these villages and hamlets depended on the production of these crops and animals, although they were always subject to climate shocks (TRC 2003). Each community had its distinctive clothing according to the temperature and humidity of the surroundings. Communities maintained collective ownership of resources such as their local facilities and agricultural land. However, private property was extensive in livestock and housing (Coronel 1996). The languages of Spanish and Quechua were both spoken, but Quechua was predominant among those more disconnected from urban markets (Degregori et al. 1996). Others, such as eastern rural communities in the Amazon, spoke different languages. Within the southern villages, agriculture was the main economic activity; they grew tubers, cereals, and grains for self-consumption. Southerners exchanged the produce with other towns in weekly local fairs. They also raised animals such as sheep, cows, and pigs at a minor scale, especially at lower elevations (Caretas 1986). Unlike the northern peasants, who were mostly small landowners, the southern villages had a more extensive communal ownership of resources (Coronel 1996).

The night watchers' patrols that engaged in actions to provide security and governance fall into two broad categories. First, the northern patrols emerged to fight crime and cattle rustlers, gradually developing a complete system of justice. Second, the southern[24] patrols, including those in the central area of the country, battled against

[24] They are also known as the counterinsurgent patrols.

terrorism. Both the northern and southern patrols emerged as peasant initiatives, but at the end of the 1980s, the southern patrols established a formal alliance with the military to expand the patrols to more communities and defeat terrorism. In both cases, patrols emerged despite the hostility of the government, which saw them as illegitimately using force. Even such smaller groups as rural towns and hamlets produced patrols or partnered to form them (Laos et al. 2003). Table 1 provides a summary of the main characteristics that distinguish the northern and southern night watchers.

Table 2. 1 Night watcher's characteristics

	Northern patrols (vs Crime and Rustlers)	**Southern patrols (vs Shining Path)**
PARTICIPATION	One member per household; if there was no male, female did not serve but did make provisions.	Each household was required to have one member; if there was no male, the female member patrolled or made provisions.
AGE MEMBERS	17 to 60 years old or independent minors	Approx. from 14 to 60 years old.
GENERAL ASSEMBLY	The assembly was the gathering of men, women, patrollers and village's authorities. A central committee or the democratic authorities informed villagers about the patrol's operations and village's problems. Assembly solved the problems, established agreements, and became the highest authority in the community.	Assembly was removed. Communal democratic authorities relinquished their position to the commandos[25] or in several cases commandos share their authority with traditional leaders. In other extreme cases, the whole community disappear and only remains a counter-insurgent base.
PATROL GROUP	Minimum 4 and maximum 10 patrollers for each sector. They patrolled once a week, approximately. The assembly[26] chose the leaders or presidents. Shifts ran from 8 p.m. to 5 a.m.	From 30 to 60 patrollers. They patrolled several consecutive days and nights, around 15 days at a time. There could be many simultaneous groups. They coordinated with the army. The leader of smaller patrols responded to the leader of larger patrols, who managed 3 to 5 smaller groups and responded to the counterinsurgent base (or "central")
SCOPE OF ACTION	Each community was divided by several sectors (2 to 4). Each sector had one patrolling group each night.	They acted inside and outside their community.
WOMEN'S COMMITTEE	The committee enforced the community agreements and patrol shifts. It also	Nonexistent

[25] Name especially used in the Ayacucho region. Commandos were patrol leaders sponsored by the closest Peruvian army base. They were also members of the community and chosen by the villagers in most of the cases.

[26] Collective arrangements such as disciplining patrols, assigning labor, patrolling scope and operational rules were determined by universal vote within the assembly (Starn, 1999). "They sat or stood in a circle, so it was easy for anyone to get in a word" (p. 130). Discussions could last for hours.

	participated in the deliberation process within the assembly.	

In 1976, the peasants from the Cuyumalca community in northern Peru decided to form the first night watcher patrol to protect themselves from assaults and robbery. Shortly after that, the northern patrols became the most independent peasant organizations in the north of the country and aggregated into large associations of patrols to serve as overseers (Ruiz 2001). Governance within the northern night watcher patrols relied on democratic procedures for rule enforcement. For instance, the northern peasants distributed straightforward booklets intended to provide comprehensive information on the local governance regulations: "The president of the patrol is in charge of enforcing the regulations; it represents the patrol and call for new elections for a new patrol and authorities. The president enforces the Assembly agreements" (FPRCC 1988, 9). They also were explicit about the assembly's role: "Every problem must be solved by the Patrol observing the agreements of the Assembly. Moreover, nothing without it" (1988, 10). Although few presidents remained in the position for extended periods (Starn 1991), for Rojas (quoted in Starn, 1993, p. 18), the democratic structure opposed terrorism and its expansion to the north. As he described the northern night watchers, "their essence is democratic, and democracy is completely opposed to authoritarianism and the imposition of terror that subversion demands."

In the south, a different structure prevailed to confront a different external threat. A villager's statement relates the growing power and authority of the commandos and the vertical structures in the south: "Those days there was no judge,

only the commandos enforced the rules, there was also a lieutenant. They punished incorrect behavior in the community by hitting peasants in the head with the weapons or other hard objects. There was no other authority in the community; then, there was no agreement only punishment" (quoted in TRC, 2003). "They were like gods," a peasant from the Apurímac River valley reported when the peasant's commando's power became undisputed. The peasant continued, "they acted like kings, and with the positions they held, they practically were kings" (La Serna 2012, 203).

In 1980, the Shining Path initiated its armed struggle by attacking and burning down a voting center and voter registration, in Chuschi, Ayacucho (in the southern Andes).[27] The leader and founder, Abimael Guzman, persuaded university students to organize a Maoist movement with the purpose of imposing a communist regime in Peru by encircling the cities (Palmer 1994; Isbell 1994). Within months of the first attack, the group obtained support from some communities. Its violent attempt to take power lasted approximately seventeen years. As a result of its actions, more than sixty-seven thousand Peruvians died, and most economic activities declined (Degregori et al. 1996). Ayacucho, the operational center of the Shining Path, represents 3.9 percent of the national territory, and it suffered 42.6 percent of the total victims of terrorism (TRC 2003). Between 1975 and 1991, national GDP grew just 1.78 percent, but in Ayacucho, it fell 13.88 percent (Ideele n. 62 1994). Between 1983 and 1984 in the Peruvian highlands, 4,858 villagers died, almost one in a hundred. Within thirteen years of the Shining Path's founding (1980–93), 10,561 people died, two of every one hundred residents (Ideele n. 62 1994). Ayacucho became the only

[27] Peru was transitioning to democracy, and it was about to hold elections for the first time after seventeen years.

region in Peru where the population diminished in absolute terms between 1981 and 1993, by 3.5 percent. Disregarding the Huamanga province, the largest urban area, where most of the refugees moved to, the population decline is more dramatic, 15.1 percent; and, if we focus only on the rural areas, the population dropped by 23.3 percent (Degregori et al. 1996).

Figure 2. 1 Timeline of crime and terrorism in Peru

Organizational Theory of Defense

The Buchanan-Tullock (1962) model emphasizes that individual choices of formal and informal arrangements offer gains and impose costs on those individuals once they select a group and a particular institutional arrangement. The process of collectivization that internalizes externalities and facilitates joint consumption produces what Buchanan and Tullock defined as external and decision-making costs. The external costs are those that individuals expect to endure because of collective agreements going against them—for instance, a collective agreement for individuals to patrol a night shift. These costs increase if the number of villagers required for this

collective agreement declines. Alternatively, deliberation costs are the time and effort required to reach a decision. When deliberation costs increase individuals adopt less inclusive decision rules and vice versa.

Anderson and Hill (2004) use this framework to explain the governance structure of wagon trains in the context of the American West during its earliest settlement.. Pioneers that traveled across the plains in search of California gold undertook the trip as joint efforts and developed rules of collective action. Most groups adopted constitution-like agreements within the wagon-train governance structure, which entailed the acceptance of captains' powers over joint production activities such as defense against thieves and Indian attacks. Leeson (2007a) extends these analytical tools to explain the governance of the pirates of the seventeenth century. For pirates, order aboard the ship rested on an autocratic control when quick decisions were critical for success in combat. However, pirates also devised democratic mechanisms to control potential predation from that authority in order to depose a predatory captain and elect another in his place.

A key determinant of deliberation costs in the Peruvian vigilante context was the time horizon over which communities could reasonably plan. [28] However, few studies discuss time horizons explicitly in the context of extralegal governance. Garfinkel and Skaperdas (2000) demonstrate that low time preference (long time horizon) among rebels may motivate them to start a war. Voors et al. (2012) show that conflict results from shorter time horizons among populations in the conflict zone and

[28] There is a literature that looks at time horizon and its influence on greed and fear (e.g., Axelrod, 1984; Kreps, 1995; Parkhe, 1993; Telser, 1980).

Gries and Haake (2016) posit a reverse relationship. But the operational mechanisms for organizations confronting different time horizons remain unexplored.

This theory, the relevance of time horizon on organizational structures, suggests three related hypotheses about whether peasant communities will erect vertical arrangements as a response to an existential threat such as terrorism, rather than the more mundane ongoing threat of cattle rustlers. I will mainly focus on the first hypothesis because it explains how different time horizons cause variation in the internal structure of the peasant patrols and communities.

> ***H1:*** *Horizontal mechanisms to provide security will prevail among the communities if their members have long time horizons and the attackers do not pose an existential threat.*

Hypothesis 1 predicts that, in contrast, vertical mechanisms develop when violence shortens villagers' time horizon and limits their expectations of gains. A short time horizon reduces the probabilities for punishment of opportunistic behavior, which results in more villagers willing to misuse resources or failing to follow the rules. Uncertainty encourages distrust and potential for defection among the villagers. The connection between current actions and future consequences is weak, which increases the costs of relying on a peer-to-peer structure to adapt to unforeseen events and to decentralize decision-making.

Alternatively, a village's defense will rest on a horizontal system if villagers anticipate having a long time horizon and lower decision-making costs. A sufficiently low level of violence allows a long time horizon. As a result, peasants can engage in trial and error to select the most suitable rules for cooperation. The connection between present actions and future consequences in this context is thick. A villager

will take into consideration a potential future punishment at some point for failing to follow the agreements. The existing possibility of restraining opportunistic behavior encourages trust among peers and sustains self-enforcing agreements. A prolonged time horizon therefore reinforces the willingness to decentralize decision-making within the community which results in democratic arrangements and peer-to-peer checks.

This hypothesis requires showing that the northern patrols were able to constrain opportunistic behavior through democratic mechanisms and decentralized decision-making while, in the South, villagers confronted a costly decision-making process and were more inclined to resort to opportunistic behavior, they suffered an existential threat that focused on those prominent individuals or democratic authorities willing to preserve the traditional order. As a result, villagers progressively allocated more authority and resources to the defense arrangement consolidating a vertical authority. The evidence I provide compares the responses to opportunistic behavior and different time horizons in the North and South to test this hypothesis.

It is possible external agents with an encompassing interest to defeat terrorism, such as the Peruvian government, had played a role to organize the night watchers. The following related hypothesis concerns whether the vertical variation on the organizational structure to fight terrorism was exogenously imposed.

> ***H2:*** *The vertical arrangement for providing defense in the southern communities was an exogenous institution induced by government.*

I can reject this hypothesis if the government's intervention occurred after the southern peasant patrols reacted against the Shining Path and, instead, both the

horizontal and vertical organizational structures rested on the willingness of the peasants confronting the external threats. If the hypothesis is to be rejected, arrangements that met the needs of the villagers and connected with their institutional endowment (Coyne 2008; Boettke, Coyne, and Leeson 2008) prevailed over others. Evidence that the peasants presented a hierarchical structure before the intervention, the government failed to maintain the patrols as temporary institutions and legalization of the internal rules of the peasantry that would allow a formal alliance with the army would confirm to reject this hypothesis.

> ***H3:*** *Cultural factors have led the two group of communities -north and south- to evolve along distinct trajectories of organizational structure.*

Social organization is often a reflection of culture (Greif 1994). It is possible the organizational structures observed in the rural communities in Peru are the result of cultural beliefs. Therefore, southern villagers could have had a cultural propensity to rely on hierarchical social patterns and structures of governance interactions. If southern villagers presented a societal organization based on hierarchies before the threat of the Shining Path, then the institutional response to terrorism derived from those patterns and cultural beliefs. Evidence that democratic check and balances were significantly prevalent in the south before the intervention of the Shining Path and those traditional arrangements conflicted with the imposition of the revolutionary regime during the war would refute this hypothesis.

Northern Patrols (H1)

For hypothesis 1 to be accepted, the evidence must support the argument made in this section: protection against crime and cattle rustling provided the incentives for

the northern peasants to organize their security, but it did not shorten their time horizon. This claim rests on three related pieces of evidence: First, cattle rustlers were a persistent problem. They stole cattle and property intermittently. Second, cattle rustlers were not numerous enough and did not have enough weapons to present a credible threat to the existence of the communities. Third, cattle rustling at consistent and predictable frequencies. As a result of this low volatility of imposed losses, peasants could identify local pilferers, punish the big thieves, and administer justice horizontally.

In the North, thievery became epidemic prior to the peasant organization of patrols. The crimes were compounded by night raids of rustlers bands. Stealing cattle from villages often was accompanied by assassinations and rapes. Some local pilferers collaborated with the "big thieves" in chains of complicity involving truckers, dealers, and slaughterhouses in the main urban areas that were some distance from the rural communities. Some "rustlers' identities were suspected, but most peasants were reluctant to report them because they feared retaliation" (Starn 1999, 46). However, the rustlers did not pose a vital threat for the community. Northern villagers were able to keep the land as their primary source of income, their market skills were built on agricultural production, and their limited (but relatively stable) financial resources (Olano 2001) kept them from taking risks such as moving into another productive activity, therefore, they maintained a long time horizon.

A long time horizon increases the probability of punishing opportunistic behavior and creates a large potential loss of multiple trusted partners. Indeed, the utility derived from cooperation with a network of trusted partners increases with the

time horizon. Both potential benefits and costs from the long horizon constrained the villagers' behavior and facilitated the democratic checks and balances. A patrol's leader emphasized the relevance of the structure: "imposing discipline free us from injustice and self-destruction" (Starn 1999, 96). Villagers were more inclined to trust their neighbors' behavior in performing specific tasks in rule enforcement. The process discouraged false accusations. "the need to hear from additional witnesses led some cases to be carried over to a future meeting. At other times one or the other party's refusal to accept any agreement led an exasperated assembly to turn the case to the town police, a threat that sometimes induced the recalcitrant to compromise" (p. 138).

"A knowledge of 'what's going on' meant that a prosperous store-owner could not plead poverty to escape a fine for missing patrol for a month. A woman known for letting her pigs stray into neighboring fields could not claim never to have allowed the animals to roam free. As history and personality informed decisions, the assembly experimented in what law professor Jennifer Nedelsky calls 'justice that highlights, not suppresses[,] the pattern of relationships behind it" (p.139). As a result, northern communities decentralized security arrangements. Additionally, reputational gains from delivering the service worked as a mechanism of contractual enforcement. Villagers who considered engaging in opportunistic behavior had an incentive not to do so because it could ruin their reputation and reduce present and future income, strengthening the self-enforcing essence of the arrangements. Moreover, a good reputation generates more benefits over the long term.

In a typical village, all men were required to patrol and attend assemblies; failure to do so could result in fees imposed on their families or consecutive patrolling shifts, but shirkers could also be subject to more severe punishment (Starn 1999; Laos et al. 2003). For instance, failing to perform a duty could require extraordinary communal work, suspension from undertaking further duties, or even ostracism. For most of the northern villages, the enforcement had a distinctive and primary role for women, "led by those of physical strength, toughness, and experience, women organized committees devoted to enforcing discipline and made sure patrollers, especially those on the difficult nocturnal shifts, adhered to their responsibilities" (Starn 1991, 61; ANDENES 1991). "Those who dodged service could expect to be roused out of bed by the wives of other villagers, fined, or even whipped" (Starn 1999, 78). A woman leading the enforcement described the procedure:

> "It was risky for the men to go after the "yellows" [those that shirked the ronda]. A lot of people had shotguns in their farmhouses in those days, whether to rob or to protect themselves from robbers. They could fight back and even shoot the men trying to make them patrol. But not with not with us women. A man would be embarrassed to hit or shoot at a woman, because he knew people would laugh at him, a attacking a bunch of *senoras*" (Starn 1999, 166)

By creating the authority to provide security for themselves, the northern villagers also confronted potential costs. Night watchers could use patrol resources entrusted to them for personal benefit and extend the authority they had been given beyond its original purpose. According to Starn (1999), villagers were concerned with

potential predation by members of the patrols: "Did the *Patrol's* president[29] pilfer money from beer sales at the town anniversary? Was he taking the side of a *compadre*[30] in a land dispute? Had he colluded with the district mayor to rally votes for a political party in elections?" (1999, 235). Starn (1999) provides an illustrative case in the Tunnel Six community: "Intimidation and even violence may have been necessary to bring thieves into line at the beginning.… The problem was that [the patrol leader] did not scale back the violence when thievery declined. The front room of his farmhouse was an interrogation center. There [patrol members] sometimes employed the 'little bird,' suspending accused rustlers from a beam to force confessions" (1999, 87).

Horizontal enforcement created protections intended to limit the potential costs of patrols' abuse. Communities enacted rules for choosing and periodically removing authorities. The democratic assembly had the most important role in determining resource allocation. It explicitly prohibited patrols from acting for private benefit (Laos et al. 2003). By specifying penalties for mismanaging resources, peasants were able to limit the scope of patrols' discretion in administering discipline and checked the patrols' potential for abuse. In the case of severe infractions, community members voted on the most suitable punishments (Starn 1999).

> They emphasized the peer-to-peer character and encouraged correction, "whipping punctuated [patrol] power and seriousness…[a] relative was often picked to administer the whipping. This lessened the chance of assault charges

[29] The northern leader of the patrol was called president in many communities. The term was taken from legal organizations and revealed the democratic spirit of the arrangement.

[30] *Compadre* usually refers to the godfather or a close friend of the family.

> later being lodged with the police, and yet the relative had to hit hard because holding back was itself punished by a whipping for not enforcing the assembly's will. As the villager to be whipped came forward to the center of the hall, he received a few words of [advice], from the person about to administer the lash: 'Learn to live better from now on!'; 'Respect your neighbors!'; 'Don't create more problems for yourself in the future.' The lash came next." (1999, 135)

The process of justice had also a horizontal structure. For instance, their administration of justice required the active participation of villagers and specific assignments were established for different committees. One committee was chosen to capture thieves, a second one to solve disputes, and a third to determine the proper punishment. This judicial system was also highly decentralized, but it could be costly. For example, when a case involved people from another village, "representatives of the patrol steering committee from that settlement walked or rode as many as eight or nine hours to be at the assembly" (Starn 1999, 132).

In the middle of a dispute, patrols emphasized a reconciliation process that would consider the long-term interests of the parties. Considering the potential costs of not having cooperation, the administration of justice did not define winners and losers, but instead, they sought a cooperative agreement and a sincere reconciliation by repairing relationships between the parties. Villagers knew they had to live with those punished for days and years to follow, so pressing for harsh punishments meant an increased chance of becoming an object of resentment and malice (Starn 1999). A local describes this economy of punishment and absolution: "we're all peasants, all

poor. Why punish someone so bad they can't work? Or sent them to rot in jail? How will their family survive? In the nightwatch you take your whip strokes, and then correct yourself, and go back to your life. All of us make mistakes, and with the patrols we learn to live better among ourselves, without the bad habits that corrupted everyone in the past." (Starn 1999, 88). "Many …liked to point to the cases of dangerous rustlers who turned into ronda leaders…in such stories individuals were remade, from evil to good, corrupt to moral, and damned to saved"(1999, 89).

Northern democratic checks and balances proved quite successful in constraining patrols and potential costs. In fact, the onerous restrictions made it difficult to find members willing to assume the leadership of their patrols. The work demanded was endless: sending summonses, attending assemblies, overseeing patrolling shifts, organizing anniversary celebrations, and attending general peasant conventions and vigilante meetings in other villages. Leaders were visited at all hours by villagers wanting to report a land battle or a theft. It was a twenty-four-hours-a-day job, it was costly, and most obviously, the position left the leaders less time for attending to their own land (Starn 1999). Consider, a patrol leader's declaration, as relayed by Starn (1999, 239): "This job tires you out. The problems never end, and people are never satisfied, and talk about you behind your back." Indeed, the capacity of the community to gather and relay information also placed another strong check on authority. It was easy for unsatisfied villagers to spread rumors about patrol leaders to undermine the leaders' support. It was not uncommon for patrol leaders to suffer humiliation or exile when the information on their performance was unsatisfactory at the end of their period. Often, they did not acquire all the necessary support for

reelection or were encouraged to resign from the position before the end of their term (Starn 1999).

Southern Patrols (H1)

The Shining Path did not initially develop in the countryside. Their members were university professors connected to the rural communities through those children of the peasantry who were students (Degregori et al. 1996). Although the members were strangers, villagers initially perceived them as visitors interested in helping them with agricultural work. Later, when the Shining Path recruited more members during expansion, many villagers became members of or sympathetic to the Shining Path which increased the deliberation costs of the communities. The high volatility of the terrorist attacks made the use of land in production almost impossible, the regular authority became fragile to punish opportunistic behavior effectively resulting in a decrease of expectations of future gains and expansion of distrust. The communal authority could not easily detect and monitor terrorists in the surrounding areas. These circumstances increased the costs of resting on democratic rules and of establishing partnerships with other communities. Therefore, southerners constructed a vertical organization, creating the unambiguous distinguishing characteristic of the South. This section offers evidence for hypothesis 1 by studying the case of the southern patrols created by people who developed short time horizons on their behavior and decision making and by providing evidence on the credible threat they confronted.

Unlike the cattle rustlers, the Shining Path challenged the survival of the southern communities. It initiated continuous and random attacks that generated fear

and destabilized community governance. The Shining Path members attacked civilians, combatants, and authorities (TRC 2003). The brutality of their crimes entailed spying, blood quotas, and public display of the victims' bodies. Terrorists had members that overlapped with the peasants within communities. Shining Path members intended to demonstrate their capacity to observe every action within the communities and punish potential opposition with public trials and executions. "Villages …contained large numbers of students and teachers, most of whom openly sympathized with Shining Path; they constituted the very core of Shining Path's "one thousand ears and one thousand eyes," and made the task of organizing community defense all the more difficult" (Fumerton 2000, 9).

Terrorists imposed harsh penalties depending on peasant reactions. Having incurred in the costs of creating a network of terror based on a significant number of committed militants with weapons, the Shining Path faced low marginal costs of making credible threats against a growing number of communities. Introducing a self-defense organization would immediately make the community a target of the Shining Path. Recognition of this contributed to delay the organization of night watchers in some communities and decisions to not form night watchers in others (Degregori et al. 1996). The TRC (2003) reports the stated beliefs of Shining Path leader, Abimael Guzman, who ordered such executions: "Against the use of the military and their peasant supporters, we responded with a forceful action: Lucanamarca. They do not forget, neither do we, that is when they saw a response they did not expect for sure. We executed 80 villagers" (Interview 1988, 19–20). Similarly, in a small district in Huancavelica (central Andes), villagers were discovered taking steps to organize a

self-defense patrol. They were executed immediately (Pardo, quoted in Tapia, 1995). "In the Amazon, terrorists went on a rampage through the small hamlets along the Sonomoro River and killed sixty-two men, women, and children, leaving 2,500 peasants homeless" (Manrique quoted in Stern, 1998). The terrorists' capacity to use violence to deliver their message was unlimited. In Santa Rosa, another Amazonian town, a group of terrorists using guns and dynamite attacked the church where villagers were congregated (Del Pino 1996).

"Towards the end of 1982, the political violence had generalized to such an extent as to engender a climate of fear, distrust, and insecurity that began to tear the social fabric of communities" (Fumerton 2000, 5). Southerners needed to reduce the growing opportunistic behavior. For this purpose, southern peasants created a rigid vigilante system that restricted people's mobility by requiring authorized passes and using physical torture to sanction the violation of rules (TRC 2003). Night watchers detained anyone in the areas under control, dead or alive. For the villagers, registration was mandatory and they were required to respond to the leadership of the patrol regarding their service duties (Legislativvo 1992). The southerners relinquished control of their schedules, identification, and social connections inside and outside of the community. They were also required to participate in military ceremonies, raising the Peruvian flag, rigid grouping, and shifts, use passwords, and suffer a reduction in their commercial activities. Peasants had to engage in training and accept these limitations on their fundamental liberties (TRC 2003, 450). Commandos demanded fees from villagers as well as surveillance shifts and decided on the allocation of resources (Coronel 1996). With greater risks, the vigilantes' hierarchical organization

removed the democratic assembly from community governance since most of those positions became temporary because of the fear of terrorist executions (Coronel 1996). "Even as late as 1997, there existed a multitude of communities in Ayacucho whose social fabric had been so ripped apart that the only authority figure that many had left was the [DECA[31]] commando. In some areas where local populations perceive a continuing threat of guerrilla attacks, DECA authorities have sometimes become even more important and powerful that the [association board] of villages" (Flagg et al. 1998, 38).

Fighting terrorism led patrols to administer immediate and strict punishment for any violation of rules. The authority of commandos was strikingly different from the community tradition of reconciliation that was widespread in the North. Internal order no longer required mutual settlement or satisfactory agreement among parties. Rather, southern patrols punished offenses much as the terrorists did, with swift executions. The written records of a communal assembly agreement in Ayacucho registered the approach of a typical patrol in 1984: "Unanimously, we demand to find out who collaborated with the terrorists; then, the guilty should be executed by the authorities of the Central Base"[32] (quoted in TRC, 2003). Failing to obey the orders was considered to be a tacit alliance with the enemy. Falling asleep or refusing to carry out guard duties meant physical punishment or execution (Starn 1995). Often, planning for combat against terrorists took place late at night in the hills surrounding the village. Unlike in the North, the organizations could not rely on trust because they

[31] DECAS was another term used mainly by the Peruvian Government to refer to the night watcher patrols

[32] A central base became the headquarters of many patrols under one command and coordinated actions with the army.

did not know who a terrorist spy might be. Instead, the organization's success, depended on their ability to control behavior at the individual level. As one patrol leader who attended these clandestine gatherings declared to the Commission, "no one could know, it was a matter of life and death; we were forbidden from even telling our wives because people said there were gossips" (La Serna 2012, 170).

Constructing a vertical arrangement had potential costs too. For Del Pino (1992), the threat of the Shining Path served to justify the patrol's abuse. Based on his field research, he comments in detail: "Many times vigilantes use their authority to solve personal problems in their favor. They expropriate resources and mistreat unknown people or those individuals who did not support the defense in their village; this behavior became more evident in the communities where the likelihood of a terrorist attack was far higher." Counterterrorist patrols were still accountable at some margins within their community, but the Shining Path's potential attacks led the patrols to venture into other communities with no defense organization where they were unaccountable resulting in abuses (Degregori et al. 1996). "To make matters worse, peasant communities also began to attack each other in vicious reprisals for supposed denunciations made either to the guerrillas or to the security forces[33]" (Fumerton 2000, 10). Despite the potential costs of erecting a vertical authority the short time horizon made those costs relatively lower and acceptable considering the nature of the problem was not expected to last for long as it is the case with most revolutionary movements, either they win or they lose.

[33] Most of the scholars report these cases are exceptional though.

Exogenous Institution (H2)

The ineffective government response to Shining Path in Peru produced increasing attention. De Soto (2016) reports the perception of the Shining Path and its threatening expansion. "In 1990, the RAND Corporation …informed the US Department of Defense that the Shining Path was 'a virtually inexpungible presence in the Andes' and that Peru was on the 'verge of collapse.' RAND went as far as predicting that the Shining Path would be victorious by 1992. The State Department feared that Peru would become another Cambodia, where Pol Pot's Khmer Rouge massacred more than three million people" (H. De Soto 2016, 13). Hypothesis 2 predicts that the vertical structure of the Peruvian communities against terrorism was an exogenous institution (Boettke, Coyne, and Leeson 2008). Evidence that (1) the constitution of hierarchical arrangements to combat terrorism occurred before the alliance with the government and (2) peasant vigilantes remained as autonomous partners of the army after the alliance will dispel this hypothesis.

> The government role in fighting the Shining Path became decisive at the beginning of the 1990s when the night watchers were already in place. "To defend themselves, the locals declared their own war against the Shining Path and began to form rural 'Self- Defense Committees', known by their Spanish acronym as DECAS[34] —armed only with 'huaracas' (Andean slingshots), spears, machetes, knives and homemade hunting rifles that were called 'hechizos.' The DECAS evolved over the years into a force of 120,000 combatants who, alongside 30,000 soldiers of Peru's Armed Forces, dealt

[34] DECAS was another term used mainly by the Peruvian Government to refer to the night watcher patrols

Communism its most resounding defeat in Latin America" (H. De Soto 2016, 7).

The peasant reaction was costly. "Between 1982 and 1985, these highlands formed the setting of numerous bloody clashes between *Senderistas*[35] and hostile Iquichan communities" (Fumerton 2000, 12). "In 1984, the victims of the Shining Path prepared a counterattack to protect the values of the emerging middle class. Approximately 20,000 peasants from Ayacucho were organized into extralegal "Civil Defense Committees," (DECAS) and proceeded to mount an offensive" (H. De Soto 2016, 19).

"This historic victory, however, was only possible once the Peruvian Armed Forces finally agreed to ally with DECAS – ten years after the Self-Defense Committees took up arms" (2016, 7). Indeed, the first peasant reactions against the Shining Path came from southern communities around 1983 (Degregori et al. 1996).

> Hugo Huillca, president of a Patrol Association in Sanamarca village, recalled the foundation, "well, we have to decide, do we defend what is ours and democracy or are we with the Shining Path? Moreover, the first step is that those organized must obey all these rules that we will set to defend ourselves…the army did not impose the patrols; we have chosen our leaders, and we all agree to fight…in our communities we know each other, who works the most, who is the laziest, who is the slowest, the conceited and the humble. With that knowledge, we have organized ourselves to dispute the Shining Path our lands and our children" (quoted in Starn, 1993, p. 45).

[35] Spanish name for Shining Path members

> "As the political violence ground on into the next decade, the proliferation and rapid expansion of rural self-defense patrols in the region from 1985 onwards was evidence of the increasing degree of active peasant participation in the counterinsurgency campaign. Totaling less than 700 in 1989, the number of self-defense patrols in the south-central Andean departments of Apurímac, Ayacucho, Junín, Huancavelica, and Pasco had multiplied to more than 1,200 by 1991" (Starn 1993, 6; Ideele 1991, 28; Fumerton 2000, 16).

The patrols maintained their autonomy within the peasantry after the partnership with the government. "Even though the organizational model and the impetus for the formation of the [DECA] came from the military, it was the peasant refugees of Ccarhuapampa themselves who appointed their own *presidente, vice-presidente, tesorero, vocal,*[36] and eight commandos, each of whom was placed in charge of defending a separate sector in the settlement and its perimeter" (Fumerton 2000, 12).

The legitimacy of the extralegal army was "recognized in Peru at the national level through Legislative Decree 741" (H. De Soto 2016, 15). The legal decree came after the Peruvian government was also able to establish an agreement with the US government to release coca farmers from a criminal category. This operation was going to allow the Peruvian government to legally use resources to help the farmers on their fight against the Shining Path. For that purpose, the Peruvian government held meetings with President George H.W. Bush months before the legalization of the

[36] Authority positions, president, vice-president, treasurer and

peasant patrols in 1991. “As soon as the President heard the explanation of the farmers’ role in Peru’s war against terrorism, his face lit up, and he said, ‘What you are telling me is that these ‘little guys’ are with us.’ He had understood perfectly.” (2016, 14).

Cultural Path (H3)

Hypothesis 3 predicts that culture is the primary influence on the governance structure of the patrollers. Differences in the societal organization of the two organizational patterns we observe can be consistently accounted for as reflecting diverse cultural beliefs. Despite the theoretical and historical importance of culture in determining societal organizations and in leading to path dependence of institutional frameworks (Greif 1994) my findings suggest the hierarchical construction in the south was not a cultural effect. Rather the institutional architecture of the peasant response to the Shining Path was a consequence of the rational selection of collective arrangements given their short time horizons and increasing deliberation costs. Similarly, Starn (1999) concludes the emergence of patrols in the north superseded the role of culture. “[E]veryone in a village knows everyone. Yet familiarity can just as easily breed rivalry as commonality, comtempt as cooperation, and schism as unity in a local society. The ties of the community were by no means a received tradition in northern villages. They had to be created” (Starn 1999).

> “In 1969, the military government in Peru carried along a land reform that removed extensive land ownership in the highlands from [large and historical landowners] that used to provide order and authority in rural Peru.

> The elimination of this landlord class generated a power vacuum at the district level. However, within the border of each community, the authority of *varayoqs*[37] strengthened" (Coronel 1996, 38).
>
> Southern villagers restored the relevance of their traditional community structures after the reform. "In the 1970s we confirm the validity of the traditional authorities or *varayoqs*; *faenas* and ayni[38] connected to the demand for rotational crops. Communal identity prevailed over the individual, and 'good behavior' was especially appreciated, respect for authorities, customs, and brotherly treatment, which contrasted with the treatment towards landlords and foreigners" (1996, 39).

For La Serna (2012, 168) "the roots of Peru's counterinsurgency patrols can be traced to the state's inability to maintain public security in the countryside." Although rural communities before the Shining Path presented some variation within their structures, there was not cultural pattern based on strong vertical authority. Most of these rural communities presented clear arrangements based on their local knowledge and long time-horizon. "…Andean communities had already begun experimenting with forms of extralegal justice before the civil war began. The counterinsurgency militias can thus be seen as a wartime extension of this broader social movement" (2012, 168).

Coronel characterized the situation of three different but key communities at the time of the conflict. "Before 1980, Culluchaca showed a strong collective

[37] Indigenous name given to the highest authorities in some communities, mainly in the center and South of the country.

[38] Traditional collective tasks carried along within the indigenous communities.

organization with legitimate authorities and a ritualistic order…Culluchaca had an early rejection of the Shining Path and coordinated their actions with neighboring communities, when Shining Path attempted to impose their 'people's committees' with absolute contempt for the communal norm" (Coronel 1996, 100). Describing a different community, Cangari, Coronel comments:

> "It was a social group weakly structured, heterogeneous, their members were recently over serving the landlord regime, with no legitimate authorities, internal conflicts…through their children who were students in the city, Shining Path obtained some support, mainly passive one, within the family leaders… for a while, Shining Path filled up an authority emptiness in Cangari."

He continued with Ocana, another community in the central highlands, "the most outstanding characteristic was also its weak organization due to migration, its limited collective action, and lack of available candidates for authorities…initially they accepted Shining Path and offered their limited support, but after the killing of former authorities in 1984…they assumed a more neutral position in the conflict" (1996, 101).

Communities, where the enforcement of Shining Path was not completely dominant, reacted against terrorists early. "It can be argued that the autonomous space necessary for planning and organizing armed community resistance was something that existed in the *punas* of Huanta in the first three years of the insurgency, but not in most parts of the other provinces already mentioned above" (Fumerton 2000, 9). The rejection of the Shining Path occurred shortly after their violent attempts to rule over

communities. “From 1984 onwards, guerrilla violence in Tambo was exacerbated by a growing reluctance of rural communities to render assistance to the rebel columns that routinely passed through the district. Rather than be displaced, however, many rural communities in the central and northeast parts of the district decided to resist [Shining Path], and for this reason are today commonly referred to as *resistentes*. Tambo’s *resistentes* were particularly concerned to defend themselves because they realized that they could not rely on the security forces to do this” (2000, 14).

The cultural beliefs in several cases interacted with the new vertical arrangements. Through the conflict, communities maintained their structural norms which were progressively removed by the need to respond to violent threats. In many of them, “the work force was familiar and communal; the forms of collective work …were kept alive” (Coronel 1996, 33). The new and necessary hierarchical order had to compete with the traditional, more horizontal, arrangements. “These [traditional] leaders apparently shared political decision-making duties with the commandos. *Tayta* Ciprián said that both the commandos and the *varayoqs* had the authority to make major tactical decisions, such as the coordination of patrol shifts. The reason traditional authorities…never relinquished their power completely had to do with the tremendous respect [night watchers] had for the institution: “Before [the violence] we respected the [traditional] authorities the most . . . because they were strict and well-spoken [and] because they still remembered the advice and wisdom of their grandparents” (La Serna 2012, 202; Coronel 1996, 38–40).

Conclusions

Peru's peasant patrols represented one of the most important rural movements in the twentieth century and the first grassroots counterinsurgency efforts in the hemisphere. Many of the historical developments that took place in highland Peru during the second half of the twentieth century are currently taking place elsewhere in the World. This attention to the Andean twentieth century becomes increasingly critical as the dynamic of political violence in twenty-first century gets under way. My analysis focuses on the structures that thousands of civilian vigilantes used to combat terrorism and ubiquitous cattle rustling despite their financial limitations, illegal operation, and lack of experience.

Consistent with previous literature (Buchanan and Tullock 1962; Leeson 2007a, 2007c), the costs of formal and informal institutions rest on (1) the number of people required for a collective agreement affecting future individual behavior, (2) the cost of enforcing rules, and (3) the cost of producing public goods. On the one hand, this suggests that people must consider these costs in order to cooperate. On the other hand, the organization for collective defense depends on the nature of these cost structures. My research introduces the impact of time horizons across a massive number of communities. I am able to explain the variation of the organizational design of defense provision in the Peruvian communities as a consequence of the shadow of the future. This analysis suggests that extralegal organizations are especially sensitive to differences in the time horizon in choosing their internal organization. The internal structure of groups varies from horizontal to vertical as they attempt to reduce the costs of controlling opportunistic behavior and maintaining functional governance.

Despite the variation, both the northern and southern night watchers were capable of combatting their specific violent threats.

This article provides evidence to test an organizational theory of defense. First, horizontal mechanisms to provide security persist if there is a long time horizon and decision-making costs are low (hypothesis 1). Under these circumstances, villagers are less inclined to incur in opportunistic behavior because they would consider a potential future punishment for failing to adhere to the agreements. Therefore, the check and balances of the community could rest on peer-to-peer enforcement. With low deliberation costs individuals conduct more inclusive processes for choosing the rules. Second, vertical authority prevails over traditional arrangements if the external threat is credibly violent. To be credible, violence against the communities focused on individuals and authorities willing to preserve the traditional order. When the greater risks toward democratic authorities and villagers were credible, the traditional positions of authority became temporary, and villagers progressively allocated more authority and resources to the defense arrangement, consolidating a vertical structure.

This theory also sheds lights on alternative explanations about the nature of the institutional arrangements in rural Peru. First, the hierarchical structure was an exogenous institution induced by the government. However, the emergence of the self-defense organization several years prior to the legalization of the patrols and the autonomy of night watchers even after the conflict provide evidence to reject this possibility (contra hypothesis 2). Second, the vast cultural endowment of the Peruvian communities in unique social, religious and ethnic groups could determine the hierarchical structure on a broad range of communities.. Evidence that the vertical

authority was different from the traditional and collective agreements of many southern communities allows to reject this hypothesis (contra hypothesis 3).

These terrorism-counterterrorism interactions matter to the success of counterterrorism by influencing its costs and potential unintended consequences. Observing political violence through this institutional, localized and historical lens can offer useful lessons for policymaking. Recent events show these conflicts plague distant settings, the effects of today's intrastate wars are felt far beyond the borders of the countries where they unfold. Such intrastate conflicts require a guideline to enable success at a reasonable cost. The policy implications of this paper aim to contribute to that guideline by identifying which causal relationships are generally relevant for reactions to violent threats within civilians and organizations. It also helps to understand the ability of local efforts to yield large-scale effects. Typically, foreign intervention requires a local ally in place with the capacity to supreme the insurgent threat as the current U.S. experience in Iraq illustrates. The historical narrative of the organizational structures of the Peruvian peasantry against the Shining Path presents a critical benchmark in the literature as it remains as the only triumph against homegrown terrorism in the Third World. It should contribute to understanding better how such conflicts can be managed.

CHAPTER III

THE ROLE OF WOMEN IN ORGANIZED VIOLENCE

Introduction

A close examination of violent movements demonstrates an increasingly role of women in their operations[39] (Kampwirth 2002; Bloom 2007b). Since the second half of twentieth century, this participation has been steadier in many insurgencies. However, this trend is not uniform across all violent conflicts. Moreover, the prominent role of women in violent insurgencies does not reflect the state of gender (in)equality in the countries where these movements emerge—countries where women typically have secondary roles. In general, gender roles are a concern for poverty relief in conflict zones as it affects the efficiency of aid programs, but the pattern we observe in several violent insurgencies may extend this concern to security issues. For instance, groups such as the Islamic State, notorious for its misogyny, encourage gender equality among their fighters and recruit females as members fully capable of causing destruction.[40] What is driving women to engage in coordinated violence? Moreover, what is causing some violent insurgencies to provide more gender equality than the formal legal environment is able to?

The relationship between women and organized violence has attracted the attention of economists and political scientists. With a particular focus on Latin America, Kampwirth (2002) examines the ideological, political, and personal motives

[39] Historical movements also register important roles for women such as the Russian Narodnaya Volya in the nineteenth century.

[40] A recent article (February 20, 2019) published in the *New York Times* describes the recent inclusion of female combatants in ISIS as part of a dynamic at the organization.

that encouraged some women to escape historical limitations and participate in violent organizations. After looking at the individual women that acted as suicide bombers, Bloom (2007a) concludes that in many instances they are seeking revenge. The case of the Huk rebellion in the Philippines (Lanzona 2009) and the historical investigation of African kingdoms (Alpern 2011) have also contributed to explaining women's involvement with violence. Overall, most of the growing literature on gender and violence has attempted to explain the female presence by looking at motivations and limitations women confront. According to this research, the presence of women is based on ideological motives, vengeance, hostility to government, or demands for representation (Gardam and Charlesworth 2000; Alison 2009; Kaufman and Williams 2010).

However, literature analyzing the organizational structures with more female participation within the insurgencies is scarce. Thomas and Bond (2015) is a notable exception. The authors' research examines 166 violent groups in African nations between 1950 and 2011. By focusing on the organizational aspects, they identify the magnitude of the organization, recruitment platforms, and strategies as the primary factors leading women to join these groups. In subsequent research, Wood and Thomas (2017) and Thomas and Wood (2018) study the differences in women's participation as soldiers across rebel groups by constructing a cross-sectional dataset for violent political organizations from numerous academic investigations, reports, and news sources. Their results show that social norms that encourage gender equality correlate positively with the presence of female combatants in rebel organizations. However, in certain aspects, such as education rate and fertility, the findings seem to

be conflicting with that initial correlation. In any case, this research does not answer the question of why those organizational attributes are particularly conducive to bringing women into the organizations, especially since social norms, group size, and political strategy are not particular characteristics of violent insurgencies. The literature has still not identified the operational mechanism underlying the recruitment platforms.

My aim here is to analyze the patterns of recruitment that encourage women to join violent insurgencies. I argue that an insurgency's structure determines the recruitment of women into violent political movements. For my analysis, I use the Nonviolent and Violent Campaigns and Outcomes (NAVCO) 2.0 dataset, which compiles annual information on 250 mass movements from 1945 to 2006 across ninety countries. I consider violent campaigns as the unit of analysis. The dataset defines a campaign as a "series of observable, continuous, purposive mass tactics or events in pursuit of a political objective" (Chenoweth and Lewis 2013, 416). My statistical results show that hierarchical structure of a campaign correlates positively with women's participation, a finding that is significant in all the models after controlling for time-variant and time-invariant characteristics. Like previous research, my study finds that the size of the movement is relevant for the recruitment of women and that some social services also influence that recruitment, especially within violent insurgencies.

This paper makes two significant contributions. First, my research builds on the economics of organizations to study the relationship between recruitment platforms and organizational structures within violent insurgencies. Second, it

contributes to the literature on gender diversity and conflict by testing specific hypotheses that connect these strands of research. Prior studies focused extensively on the personal motives that stimulate women to participate in organized violence (Cunningham 2003)[41]. In this paper, I focus on the structure of the insurgencies to explain the presence of women. Consequently, I examine when insurgencies are more likely to recruit women. This paper sheds light on the patterns of women's participation, their active engagement within insurgencies, and the recruitment by violent campaigns. Thus, I examine the influence of campaigns' structure on the extent of female presence across violent movements in different countries.

The remainder of the paper is organized as follows. Section 2 provides background, describing the research on the relationship between women and organized violence and the literature that discusses the organizational structures of extralegal groups in violent environments. Section 3 offers a recruitment theory based on organizational structures to explain the presence of women within campaigns. Section 4 presents the data and methodology. Section 5 discusses the empirical analysis and presents the results. Section 6 offers conclusions.

Women and Violence

Investigation of a significant amount of women that were former combatants reveals that many armed movements have vigorously enlisted females and that when have been given the opportunity to support the movements they have actively embraced them (Coulter, Persson, and Utas 2008; Kampwirth 2002). Several examples

[41] Another strand of research that discusses governance institutions within violent organizations has identified the mechanisms by which these groups provide internal order (Leeson and Skarbek 2010; Skarbek 2012b; Gambetta 1996).

across different countries also demonstrate the strong presence of female members within armed groups. They suggest that more than 50 percent of all violent organizations include women and more than a third employ them as fighters (Henshaw 2016; Thomas and Bond 2015; Wood and Thomas 2017). An extension of this analysis suggests that women are not submissive victims of compulsory recruitment and often exhibit a degree of authority within campaigns (Coulter, Persson, and Utas 2008; McKay 2005). Sjoberg and Wood (2015) make clear that assessing women's roles within violent campaigns can be difficult because of campaigns' clandestine nature, though they note the strong presence and visibility of women within these movements. Others such as Reif (1986) and Gonzalez-Perez (2006) have maintained that low levels of women's participation in some insurgencies are the consequence of lack of interest by the movements in reflecting their interests.

Most of the research attempting to explain the participation of women in violent insurgencies has focused primarily on their personal motivations. Bloom (2005) finds that women tend to engage in violence because of personal revenge or animosity against the establishment. Organizations in such insurgencies can also play a role as means of expressing opinions that otherwise would not be possible in countries with restricted freedom of expression or authoritarian governments (Cunningham 2003). Although most of these reasons are plausible, they are not limited to women and violent movements. For instance, considering that women and men are both victims of violence during conflicts, men can also experience desire for revenge (Carpenter 2006; Coehn 2013).

Revenge, opposition, and alternative channels of expression are not the only factors that influence the supply of individuals willing to join violent insurgencies. For Atran (2003) and Gurr (2011), economic, social, and political grievances may also explain the willingness to enroll in violent movements. These motivations also extend to security concerns (Eck 2010) and convergence of individual interests with the organizations' goals (Weinstein 2005). All these aspects have been presented as explanations of individual participation in organized political violence. Though these elements contribute to explaining the motivations behind the willingness of women to join violent organizations, still these reasons for women's participation focus on the supply side only and it remains the need to investigate whether the demand-side factors matter (Thomas and Bond 2015).

When looking at organizations involved in violent campaigns, an important pillar that determines their recruitment process is the provision of social services to the constituents and communities in which they operate. The provision of social services grants violent organizations multiple mechanisms to weed out potential defectors, provide internal order, and engage in risky terrorist attacks more effectively by having more-trustworthy members (Berman 2009; Berman et al. 2018). These organizations deliver education, welfare, food, medical services, and religious services. For instance, governance and justice are services with large demand provided uniformly across violent groups. These services are less capital intensive than the hospitals provided by Hezbollah or the educational institutions by Hamas, but they allow organizations to obtain valuable local information necessary for their operations (Heger and Jung 2017). These characteristics are not restricted to Islamic organizations: the Colombian

FARC supplied medical services, and the Shining Path in Peru initiated its expansion by providing schools and conflict resolution to rural communities (Smith 1994). A closer look at these connections has been undertaken by Flanigan (2008), who examined the structure of service provision as a response to the differences in resources and capacity between Hezbollah and the Liberation Tigers of Tamil Eelam (LTTE).

The number of services provided varies (Heger and Jung 2017). Also, as Thomas and Wood (2017) document, while there is a division of labor based on gender in virtually all violent organizations, the actions undertaken by female participants vary significantly. Alison (2009) and Thiranagama (2014) relate the role of women in ethnonational conflicts in South Asia, where women play a role in tasks such as recruiting and disseminating propaganda, and find little evidence that women participate on the front lines. Instead, women may be involved in support capacities such as the provision of food to male soldiers and caring for their families (Shehadeh 1999).

The economic theory of clubs explains how large sacrifices required from potential members complement the strategy of providing services (Berman and Laitin 2008; Iannaccone and Berman 2006). The role of sacrifice is not uncommon in organizations that provide services to their constituency. For instance, Israeli ultraorthodox men attend yeshiva until age forty on average because they benefit from access to a remarkable mutual-aid network based on charitable actions (Berman 2000).

The literature seems to provide convincing evidence that some aspects of the provision of services explain the need for both men and women as members. Service

providers likely have a broader support base. They might expand quickly in those areas where governance by the state is weak, as in the stationary-bandit pattern (Olson 1993). Maoist groups such as the Shining Path started their campaigns from the impoverished countryside before continuing to the cities. Further, the provision of services may make recruitment less costly as it increases the population's perception of the groups' legitimacy to hold power over the communities in which they serve (Van Tuijl 1999; Hasenfeld 1987). Grynkewich (2008) and Flanigan (2006) have identified the mechanisms by which service provision connects with power, legitimacy, and support for organizations.

Recruitment for Violence

Women's participation varies considerably across violent insurgencies. We have seen the reasons why women join these movements and several features of these insurgencies that may encourage women to engage in violence. Although the research discussed above reports useful findings, it does not examine the movements' organizational structure as a possible explanation for the recruitment of women. Similarly, other characteristics of insurgencies may be the institutional responses to the need to recruit members and pursue the insurgencies' goals. Figure 1 shows a matrix and examples of some of the most notable insurgencies in each category.[42]

	Women	No Women
Hierarchical	Shining Path (Peru) ETA (Spain)	Taliban/Anti-government force (Afghanistan) GAM (Indonesia)
Horizontal	IRA (Ireland) Chechen Separatists (Russia)	Hezbollah (Lebanon) Kurdish Rebellion (Iraq)

Figure 3. 1 Distribution of women across campaigns

[42] A list of all the campaigns under examination is in the appendix.

In this section, I seek to shed light on how a hierarchical arrangement plays a distinct role in recruiting women. Though group size, campaign duration, ideology, and religion are positively correlated with women's participation (Thomas and Bond 2015), I see the structure of the campaigns as having an independent influence on women's participation within violent insurgencies. I conjecture that hierarchical insurgencies confront fewer costs when they integrate diverse elements s, which encourages leaders to embrace the recruitment of women. In contrast, horizontal movements are more sensitive to the hazards of diversity, forcing them to preserve a homogenous structure. For this purpose, I formulate the following hypotheses.

H1: *Hierarchical insurgencies are better equipped to incorporate women.*

Several mechanisms could explain why this hypothesis might be true. Though the current data set does not allow distinguishing which may be the one that matters the most, I elaborate on potential theoretical frameworks. The Buchanan and Tullock's (1962) framework stresses that decision-making costs determine the process of collectivization, which internalizes externalities and facilitates joint consumption. If diverse elements in a group raise these decision-making costs, we expect to see an exclusionary arrangement in the decision-making process; this means a hierarchical order within the organization when they include gender diversity.

Evidence also shows that a consensus-based insurgency has a flat structure, the leadership is spread across multiple groups and individuals, and each leader influences tactics, strategy, and resource distribution. Because of this pattern, the elements within the campaign may be more reluctant to include diverse members, as such members

may have more influence on the direction of the campaign. Anticipating the potential conflict, the groups and individuals in the campaign strategically decide to maintain a degree of homogeneity. On the other hand, a hierarchical structure that has already solved the collective-action problem with clear lines of authority presents higher barriers to the disruption of the campaign's direction, and the benefits of diversity, such as more human capital and labor, sympathies from other groups in society, and a different perspective may exceed the potential costs of internal conflict.

Leeson and Rogers (2012) study the effect of a highly competitive environment in criminal industries resulting from the presence of low costs to entering the industry. In the specific case of criminal organizations, competition, understood as the number of barriers to enter the industry, impacts the organizational structure. Physical capital, labor, and human capital are startup costs that potential criminals must take into consideration to engage in their projects. These costs determine the organization of producers in those industries. In more competitive criminal industries (with low startup costs), producers use hierarchy to enforce collusion and preserve their profits by deterring potential new competitors. In less competitive criminal industries (with high startup costs), hierarchy is not necessary to deter competitors and producers choose organizational flatness instead. It is possible that the hierarchies we observe in violent campaigns result from a competitive environment. If this is the case, these violent insurgencies, facing the threat of new competitors in the industry, will have stronger incentives to welcome women into their structures. Alternatively, organizations with no competition (with high startup costs) may have stronger

incentives both to resort to discriminatory practices and to implement a horizontal structure for their campaign.

The Becker (1971) model may help to clarify the role of competition within violent campaigns and why the resulting hierarchies include women. In the case of companies and organizations, some workers, employers, or customers do not want to work with members of other racial groups or people of other genders. Extending this framework to violent organizations may be useful to explain the rationale behind the variation in the recruitment process behind the campaigns. A competitive environment will force the organizations to treat potential members, both men and women, similarly. However, if it is possible to treat women differently than men, then the insurgency confronts a trade-off: it can employ female members in lower positions and increase its effectiveness, or it can discriminate and employ only men even though this may mean lower effectiveness. Discrimination in this latter case imposes a cost on the organization. Therefore, the discriminatory practice can persist only if there are factors that limit the amount of competition in the insurgency.

Another possible influence on the recruitment of women is the extent of services provided by the insurgency. For instance, Hamas provides schools and universities (education), care for refugees and orphans (social services), clinical and medical centers (health), syndicates, sports clubs, and media (public services), and religious institutions (M. Levitt 2006). Campaigns that provide services may have a considerable demand for women and members in general, especially for labor-intensive services. Viterna (2013) finds that organizations devote considerable efforts to recruit women who are instructed and have particular skills such as technical

capacities, medical training, or experience in political strategy. The Salvadorian FMLN placed women as operators, combat medics, and community organizers. Hence it is important to test hypothesis 2:

> ***H2:*** *Campaigns are more likely to employ women if they provide social services such as health care, schooling, welfare, disaster relief, justice and policing.*

Analyzing the relationship between a campaign's structure and women's participation should contribute to understanding discovering the recruitment process and possible ways to end violent insurgencies. Thus, any positive correlation between campaign structures and women's participation should be considered in the context of the most recent research on organizational structures and the effectiveness of violence. To test these hypotheses, I use a panel dataset through binary models that take into account the variation of women's participation between those violent insurgencies in which there is no evidence of women and those with female presence across different countries.

While I have presented possible explanations for a positive connection between hierarchies and women's participation, it is possible there are some cases in which hierarchies are negatively correlated with women's participation. For most of these cases, these theoretical frameworks will serve to define which mechanisms are likely to matter most and can help distinguish what is common across multiple insurgencies to what is unique to a particular insurgency. Using these lenses can make it easier to analyze the expansion and recruitment strategies and implement a counterinsurgency tactics that results in sound insights. The testing of these relationships contributes to an explanation of the organizational structure of violent

insurgencies, the role of women within those campaigns, and the possible construction of a doctrine that aims to undermine insurgencies. I also believe these correlations generate the possibility to test for new relationships and hypotheses.

Data

Measuring Women's Participation and Campaign Structures

I use the NAVCO 2.0 dataset, from Chenoweth and Lewis (2013), which gathers yearly data on 100 nonviolent and 150 violent insurrections between 1945 and 2006. The coding system registers campaigns that reached at least a thousand active participants; so, it contains information only on major and more-representative campaigns within each country. The dataset builds on an earlier edition, NAVCO 1.0, which focused on campaigns without time variation. The indicators on nonviolent campaigns are based on an exhaustive collection of encyclopedias, case studies, and a comprehensive bibliography on nonviolent resistance and social movements (Carter, Clark, and Randle 2006). The indicators on violent campaigns are mainly derived from the Correlates of War (COW) database on intrastate wars, Clodfelter's (2002) encyclopedia of armed conflict, and a list of major counterinsurgency operations for information on conflicts (Sepp 2005), and additional cases from the Uppsala Conflict Data Program (Harbom, Melander, and Wallensteen 2008) and Fearon and Laitin (2003) among others. The dataset's panel feature characteristics at the campaign level such as movement size, the behavior of the regime elites, the level of repression, support from external sources, campaign goals, services provided, and gender diversity. The dataset excludes unknown failed nonviolent and violent campaigns, so

the data comprise information only on "major campaigns with maximalist goals and a high level of sustained participation over time" (Chenoweth and Lewis 2013, 420).

The broader consideration of campaigns instead of just groups is justified by the fact that violent events are not usually independent from one another. Besides, a campaign may appeal not only to violence but to nonviolent tactics to reach its political goals; hence, the primary tactic within a campaign may change from nonviolent to violent and vice versa. It is important to focus on campaigns instead of organizations because many organizations devote resources to their survival rather than the engagement in conflict and several of these organizations also become inactive for certain periods. Organizations also interact with other groups in collective campaigns to reach their goals. According to Chenoweth and Lewis (2013), analyzing campaigns rather than events and organizations allows us to capture a "broader spectrum of collective activities as a whole, as well as the intra-organizational coordination processes necessary for collective action" (2013, 417). Therefore, it should provide a broader understanding of women's participation in violent insurgencies.

The leading dependent variable is the indicator for *gender diversity.* This indicator provides information about the presence of members in the insurgency who are female and participate in coordinated actions to reach the campaign's goals. It is a dummy variable that reflects information on whether the campaign contains gender diversity. This variable is coded as "diverse," or one, when there is evidence that the campaign has women participants and "not diverse," or zero, when there is no evidence of the presence of women. The primary independent variable is the campaign

structure. This indicator is a dummy that depends on an analysis of the extent to which there is a decision-making hierarchy within the campaign. The indicator is coded as "hierarchical," or one, if there is a clear centralized structure based on a hierarchical organization with a clear structure of authority, which is often but not necessarily associated with a single leader. If the campaign structure is based on numerous groups or individuals and each is able to change the direction of the campaign, then it is coded "nonhierarchical," or zero.

Controls

I consider campaign attributes that may affect the recruitment of women over time. Seven controls are specific to the provision of services, and three controls are specific to the campaign's dynamic. I control for the level of *repression* against the movement. This is a categorical discrete variable that reports four levels of repressive actions carried out by the state in response to the campaign. By looking at the peak events, the variable represents the extent to which the government used its coercive apparatus, which includes security agencies, economic fines and taxes, and the justice system, to suppress opposition. At the highest degree of government repression, the indicator is coded as three. At the other extreme, if the state does not respond or responds in a conciliatory way, then it is coded as "none," or zero. Higher levels of repression may discourage the recruitment of women.

I also control for the *size* of the movement, considering that organizations may recruit women once they become large and stable. These well-established groups will also confront lower marginal costs to incorporate women as women's role will be less

threatening to the cohesiveness of the group. The indicator is also a categorical discrete variable that registers as zero with the lowest level of participants and as five with the highest. This information is collected from scholarly estimates, news, and reports. The coding also relies on "peak events" to track the size of the campaign. Table 3.1 shows the coding scheme for this indicator.

Table 3. 1 General Campaign Size

Codes	Indicator of general size of the campaign by members
0	1-999
1	1000-9,999
2	10,000-99,999
3	100,000-499,999
4	500,000-1 million
5	>1 million

The nature and degree of *internal conflict* in the campaign may also affect the recruitment of women as groups may have stronger incentives to recruit new members if they help them to prevail among rivals. This indicator identifies the extent of the conflict in the campaign among groups, factions, or leaders. Though it may resemble an indication of competition based on the number of rival groups in the campaign, it does not represent the kind of contestability Leeson and Rogers (2012) referred to as the barriers to enter criminal industries based on startup costs. Another important distinction is that those groups involved in a criminal industry such as a drug cartel or the Mafia have the purpose to secure profit and power. While my analysis here refers to the violent political movements where the primary purpose of the organizations is not profit but political goals.

Because of this reasoning, caution is in order when analyzing this indicator. The dataset defines it as the intensity of conflict within the campaign. Therefore, it reports the degree of conflict among groups, factions, or leaders. This categorical

variable is coded as zero when the campaign is seemingly united, one when there is cooperation with moderate disunity, two when there is verbal or active competition among discrete groups with some physical violence, and three when there is active, violent competition among groups. It is not an ideal measure of contestability considering that it is based on the rivalry within the campaign and not the costs to join the campaign. On the one hand, a seemingly united campaign (coded as zero for *internal conflict*) may reflect a collective agreement on an authority and no internal conflict. On the other hand, the existence of numerous organizations presents more possibilities for disagreements and may indicate a horizontal campaign with larger potential for rivalry (coded as three).

It is also relevant to control for the provision of services such as education, social welfare, police, traditional media, new media,[43] army, and justice. All these indicators are dummy variables that indicate whether the insurgency establishes parallel institutions to provide alternative services to those of the government. These variables are coded as one when there is evidence that the campaign has provided these services and zero when there is no evidence of this provision. The presence of women may accompany the provision of services in general as long as the insurgency requires more labor and human capital. It is also possible that some services require more women than others, in which case some services might be more relevant for the recruitment of women within the insurgency. Table 3.2 reports the summary statistics for gender diversity and indicators of campaign structure, services, and controls.

[43] Traditional media includes newspapers, television, and broadcast radio. Alternatively, new media is any publicly available source of internet information including news websites, blogs, and online radio and video.

Table 3. 2 Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Female Presence	1,266	.6943128	.4608799	0	1
Education	1,072	.511194	.500108	0	1
Social Welfare	1,039	.5197305	.4998512	0	1
Police	1,024	.4160156	.493137	0	1
Trad. Media	1,155	.6839827	.4651211	0	1
New Media	927	.0517799	.221702	0	1
Army	1,321	.9742619	.1584128	0	1
Justice	964	.3578838	.4796265	0	1
Size	1,281	1.440281	.819528	0	5
Repression	1,365	2.846154	.5560203	0	3
Hierarchical	1,367	.7315289	.4433262	0	1
Internal Conflict	1,367	1.313094	1.127974	0	3

Empirical Strategy and Results

To estimate the correlation of women's participation in violent movements and given the binary nature of the dependent variable, I use linear probability models (LPM) and logit regressions with and without year fixed effects to capture unobservable factors that are time-invariant. I compare the presence of women within these campaigns to several attributes that may change over time: alternative-service provision, the degree of repression against the campaign, campaign size, the degree of internal conflict, and the structure of the campaign (horizontal or hierarchical). Table 3.3 reports the results. Model 1 registers the correlation between the structure of the campaign and controls based on an LPM. Model 2 applies the same LPM with fixed effects, model 3 uses a logit regression, and model 4 includes the same logit regression with fixed effects. The models consider women's participation as the primary dependent variable, and the campaign structure is the primary independent variable. Model 4, the fixed-effects logit model, is the main specification and also provides the odds ratios.

The results show a positive association between hierarchical campaigns and the presence of women, an association that is statistically significant across all the

models. Specifically, the results show that violent insurgencies with a hierarchical campaign are more likely to recruit women, which is consistent with the main theory. This relationship is robust to controlling for the campaign's size, the level of repression, the degree of internal conflict, and the provision of services such as education, justice, police, army, social welfare, and media. The fixed effects allow us to control for time-invariant characteristics such us religion or ideology among other insurgency-level controls that have been reported as influential factors for the recruitment of women in previous research.

The logit coefficient for the campaign's size is also significant and positive, which reveals a positive correlation between women's participation and large campaigns. As previous research showed (Thomas and Bond 2015), the results suggest women are more likely to enroll in violent insurgencies when the insurgencies have considerable size and are stable. However, it is possible that campaigns increase their size when they start recruiting women. Generally, the results provide empirical support for my central argument. As violent movements devote their resources to build a hierarchical campaign, they become increasingly likely to include female members. Also remarkable is the finding that the variables that would present possible bias to the degree of repressions and services, such as justice, media, army, and education, are statistically insignificant in the main specification (model 4). However, the results show that the provision of police is correlated with more female participation and that social-welfare provision has an inverse relationship with the recruitment of women.

Table 3. 3 Testing hierarchical insurgencies. Linear Probability Model 1 and 2 and Logit Model 3 and 4

Ind. Variable	Dep. Variable: Female Participation			
	Model (1) LPM	Model (2) LPM FE	Model (3) Logit	Model (4) Logit FE
Education	0.0163	0.000421	0.135	2.434
	(0.0531)	(0.0507)	(0.355)	(1.845)
Social Welfare	0.324***	0.0208	1.883***	-4.287**
	(0.0520)	(0.0635)	(0.346)	(2.188)
Police	-0.223***	0.0419	-1.493***	4.222*
	(0.0432)	(0.0457)	(0.318)	(2.271)
Trad. Media	0.121***	0.103***	0.722***	1.065
	(0.0337)	(0.0306)	(0.208)	(0.690)
New Media	-0.104	-0.0260	-0.748*	-0.754
	(0.0677)	(0.0500)	(0.450)	(1.307)
Army	-0.358***	-0.194**	-1.810***	-14.48
	(0.0752)	(0.0854)	(0.475)	(1242.9)
Justice	0.215***	0.0907**	1.529***	-0.776
	(0.0468)	(0.0447)	(0.342)	(1.667)
Size	-0.0231	0.0380**	-0.139	1.343**
	(0.0172)	(0.0174)	(0.108)	(0.577)
Repression	-0.0257	0.0398**	-0.127	0.306
	(0.0250)	(0.0160)	(0.144)	(0.300)
Hierarchical	0.202***	0.159***	1.073***	3.762***
	(0.0361)	(0.0382)	(0.212)	(1.135)
Internal Conflict	-0.0340**	-0.00418	-0.245***	-0.443
	(0.0134)	(0.0111)	(0.0859)	(0.385)
N	826	826	826	230

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Note: Linear Probability Model (LPM), LPM with Fixed Effects, Logit and Logit with fixed effects/conditional logit

Odds Ratios

To interpret the coefficients, it may be helpful to consider the odds ratios (OR) reported in table 3.4. Only the odds ratios for the logit regression with fixed-effects coefficients are reported. For women's participation, two major variables stand out from the rest in their statistical significance: *hierarchical* and *size*. The OR for hierarchical structure is 43.04, which means that if a campaign switches from having a horizontal to a hierarchical structure, the odds of including women are multiplied by 43.04. And if a campaign increases from a lower to a higher size, the odds of including women are multiplied by 3.83. The provision of social welfare and the provision of

police are also significant to explain women's participation. My findings show that if a violent insurgency provides a police service, the odds of including women are multiplied by 68.16, which reveals the great relevance of this service.[44]

Table 3. 4 Odds Ratios and 95% Confidence Intervals

Female Presence	OR	Std. Err.	z	P>z	[95% Conf.	Interval]
Education	11.40425	21.04044	1.32	0.187	.3066408	424.1345
Social Welfare	.013744	.0300725	-1.96	0.050	.0001886	1.001331
Police	68.16359	154.8301	1.86	0.063	.7944968	5848.072
Trad. Media	2.901744	2.003436	1.54	0.123	.7498396	11.22922
New Media	.4706899	.6153402	-0.58	0.564	.0363033	6.102726
Army	5.16e-07	.0006413	-0.01	0.991	0	.
Justice	.4600591	.7671422	-0.47	0.641	.0175165	12.08315
Size	3.830276	2.211645	2.33	0.020	1.235198	11.87746
Repression	1.357895	.4075361	1.02	0.308	.7540511	2.445298
Hierarchical	43.04172	48.86678	3.31	0.001	4.650403	398.3719
Internal Conflict	.6418745	.246819	-1.15	0.249	.3020918	1.363833

Note: Odds Ratios Logistic Regression with Fixed Effects

These results should help to build a doctrine to manage violent conflicts. The current US counterinsurgency manual alludes to the "hearts and minds" strategy when it comes to handling violent insurgencies. Berman, Felter, and Shapiro (2018) identify the four possible mechanisms by which aid may serve to promote stabilization, though proponents of these mechanisms sharply disagree on their relevance and effectiveness in conflict zones: *Self-interest* of civilians is a mechanism to protect their neighborhood from potential government control. *Gratitude* for the services provided sways civilians to the government side. *Grievance* is a third mechanism; the idea is that if a lack of services and poor economic conditions encouraged conflict, then treating these grievances would end the insurgency. The final mechanism is the *labor market.* Aid projects can provide jobs and incentivize insurgents to move away from

[44] Including the nonviolent campaigns, the relevance of the hierarchical structure and size of the insurgency remains. The significance of the provision of police emerges only with the violent insurgencies.

violent actions. My results suggest that any strategy designed to undermine violent insurgencies should consider the organizational structure of the campaign, the changing demography of the groups involved and the specific services they provide.

Also, Berman et al. (2018) argue that the differences in mechanisms to undermine the social networks of services provision matter because they define the conditions for success or failure of counterinsurgency projects. My findings offer a perspective on another dimension. There is a direct connection between the structure of the campaigns and the recruitment of women. According to my findings, hierarchy is a statistically significant variable to explain women's participation. My findings also confirm the relevance of the size of the campaign and the large influence of some services, such as police, on the likelihood of including women in violent insurgencies.

Conclusion

In this article, I attempt to clarify the patterns that we observe across violent insurgencies and the enrollment of women within some of these. I argue that hierarchical command and control within campaigns increases the prospect of recruiting women. Having diversity within an insurgency increases decision-making costs, which encourages a more exclusionary arrangement of authority. This process reduces the potential conflict within hierarchical movements, making it better able to incorporate women.

Accordingly, horizontal insurgencies can be more susceptible to hazards from the inclusion of women within the movement, and, anticipating potential conflict, they are concerned with keeping a homogenous composition. Having high startup costs to

join the insurgency means there is no practical need to devise a centralized authority, and then the groups and individuals within the insurgency tend to prefer flat structures. Also, the homogeneous composition within a campaign tends to reduce decision-making costs. As a result, these insurgencies are able to keep a consensus-based process for the direction of the insurgency.

(Leeson and Rogers 2012)Though the theory of contestability and organizational structure focuses on criminal groups, it may have important implications for violent insurgencies involved with political goals such as removing existing regimes, expelling foreign occupations, or achieving self-determination. According to what this theoretical framework has examined, a hierarchical structure may reflect a competitive environment—that is, low costs to joining the insurgency. Considering the low costs, groups and individuals within the insurgency organize a central authority capable of enforcing collusive agreements. At the same time, a competitive environment will encourage campaigns to suppress discrimination and increase women's participation.

There is extensive literature that examines the role of women through episodes of violent campaigns. However, few studies investigate the organizational structure of these campaigns and their relationship with internal inclusionary arrangements in order to explain the presence of women. My research adds to this body of literature by providing alternative arguments and supporting evidence to identify the conditions under which women engage in coordinated violence. It also provides new evidence on why rebel tactics differ across insurgencies. My results also replicate the prior finding that large, stable groups tend to recruit more women than small, unstable groups. They

also reveal a particular role of services in inducing women's participation, especially the provision of police (or security).

My results provide empirical evidence to support the central hypotheses. Violent organizations that switch from horizontal to hierarchical structures are more likely to recruit women. The intricacies of the causal mechanisms deserve further analysis and clarification, though the correlation implies that the formulation of effective policy should consider this research as evidence of connections between the organizational structure in campaigns, the recruitment process, and the lethality of violent movements.

However, there are some important caveats in interpreting these results. First, the primary dependent variable, which registers women's participation, collects information on numerous insurgencies, but its binary nature does not allow us to measure how involved are women in these insurgencies, nor their specific roles. Also, the simplicity of having two groups may cost some information: if groups with few women are more similar to groups with no women at all than to groups with a large number of women, it is not feasible to capture that information with a dichotomous dependent variable.

Second, I lack a proper measurement of contestability, which impedes me from reaching further conclusive results. An ideal indicator of contestability would quantify the costs that individuals and organizations confront to be part of the insurgency and reflect the nature of competition among violent groups with political objectives that differ from criminal groups competing for profit. A simple measure of the number of organizations in one single campaign is not a precise measurement of the concept in

play. A single organization may be operating within a high level of contestability as long as the costs to start an alternative movement are low. Conversely, an environment with several groups may be noncompetitive because of high costs to enter the insurgency or create alternative movements.

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APPENDICES

APPENDIX A

ALTERNATIVE DONOR UNITS

The execution of the method considers two alternative group of donors for the GDP per capita. A first counterfactual built with a restricted sample and the second one with an expanded sample. Table A.1 presents the weights and inference. Table A.2 includes the fit of the predictors for each case. The first alternative synthetic counterfactual includes only Latin American countries and two former European colonizers (Spain and Portugal). It also contains three noticeable copper producers, Peru, Brazil, and Mexico. The second alternative dataset adds nine countries. They are the most relevant copper producers with adequate data during the period of examination. Only Zambia, which had GDP per capita information but lacked information on openness indicators, has been removed from those potential countries.[45] We see that that with the change in donor countries, the pre-treatment fit is worse, as a considerable weight is now assigned to China, which is a very poor match for Chile's initial GDP per capita.

[45] Other countries such as URSS and Poland had been removed because of the lack of information on GDP per capita in data of the World Bank, which is our dependent variable of interest (Moussa, 1999).

Table A. 1 Estimated synthetic control weights, change in donors

	Restricted	Expanded
Argentina	3.20	31.8
Australia	–	0.00
Bolivia	0.00	0.00
Brazil	0.00	0.00
Canada	–	0.00
China	–	10.6
Colombia	0.00	0.00
Congo De. Rep.	–	0.00
Costa Rica	0.00	0.00
Dominican Rep.	0.00	0.00
Ecuador	0.00	0.00
Guatemala	0.00	0.00
Honduras	0.00	0.00
Indonesia	–	0.00
Mexico	0.00	0.00
Nicaragua	0.00	0.00
Panama	53.2	1.80
Peru	0.00	44.0
Philippines	–	0.00
Portugal	0.00	0.00
South Africa	–	0.00
Spain	0.00	0.00
United States	–	0.00
Uruguay	43.6	11.8
Venezuela	0.00	0.00
Model fit pre-intervention		
RMSPE	0.096	0.109

Note: Columns show the weight assigned to each country in the synthetic controls for Chile for both, the restricted and expanded sample. A dash (–) specifies that the donor is not available in the dataset. Weights are in percentage points. Rounding errors may prevent columns from summing to 100.

Table A. 2 Indicator fits, GDP per capita, change in donors

Variables	Actual Chile	Restricted	Expanded
		Synth. Chile	Synth. Chile
Avg. GDP per capita	4037.13	4218.48	4238.68
Pop. growth rate	2.10	1.97	2.10
Openness, 1960	29.17	67.91	29.2
Openness, 1972	23.06	74.87	23.10
Total ed., 15+, 1960	5.22	4.75	4.12
Primary ed., 15+, 1960	3.98	3.83	3.30
Total ed., 15+, 1970	6.09	5.46	5.07
Primary ed., 15+, 1970	4.46	4.12	3.84

Note: Table shows the results of indicator variables and the average pre-Pinochet outcome variable for actual and synthetic Chile for both, the restricted and expanded sample. Average GDP is an average over the pre-Pinochet period, 1960–1973. GDP per capita is measured in 2010 dollars. Population growth is in percentage points. Openness is a share fraction of GDP, in percentage points. The education variables are measured in years.

APPENDIX B

JACKKNIFE RESAMPLING

I consider the baseline model for GDP per capita while dropping each donor that received a weight in the synthetic counterfactual. Table B.1 presents the results of these models which exclude, Argentina, Panama, and Uruguay. Excluding Panama and Uruguay produce new members for the compositions of the synthetic controls such as Bolivia and Ecuador. However, none of these different controls produces a better fit pre-intervention than the initial construction. Their RMSPE is 0.144 and 0.155 respectively. The counterfactual that drops Argentina is a close approximation to the opening results but still maintains a higher root square error. Table A.4 reports the indicators of these versions of the model and compare them to those of actual Chile.

Table B. 1 Synthetic Control Weights, Jackknife Resampling

	Drop Argentina	Drop Panama	Drop Uruguay
Argentina	--*	37.10	45.7
Bolivia	0.00	5.20	6.00
Brazil	0.00	0.00	0.00
Colombia	0.00	0.00	0.00
Costa Rica	0.00	0.00	0.00
Dominican Republic	0.00	0.00	0.00
Ecuador	0.00	47.00	48.3
Guatemala	0.00	0.00	0.00
Honduras	0.00	0.00	0.00
Mexico	0.00	0.00	0.00
Nicaragua	0.00	0.00	0.00
Panama	52.30	---*	0.00
Peru	0.00	0.00	0.00
Portugal	0.00	0.00	0.00
Spain	0.00	0.00	0.00
Uruguay	47.70	10.80	---*
Venezuela	0.00	0.00	0.00
Model fit pre-intervention			
RMSPE	0.099	0.144	0.155

Note: Columns present the weights assigned to each country in the synthetic controls for Chile. Each column includes a synthetic control for a different outcome variable. A dash (–) indicates that the country is not available in the dataset for the given comparison. Weights are in percentage points. Rounding errors may prevent columns from summing to 100. The root square error (RMSPE) indicates the average pre-intervention prediction error.

* These donors have been excluded in order to show the effect on the weights and fit of the model

Table B. 2 Indicator fits, Jackknife Resampling

Variables	Actual Chile	Drop Argentina Synth. Chile	Drop Panama Synth. Chile	Drop Uruguay Synth. Chile
avg. GDP per capita	4037.13	4207.55	4294.78	4307.84
Pop. Growth Rate	2.10	1.93	2.12	2.22
Openness 1960	29.17	67.85	27.92	26.46
Openness 1972	23.06	74.62	23.97	22.62
Total ed. 15+, 1960	5.22	4.72	4.30	4.33
Primary ed. 15+, 1960	3.98	3.80	3.60	3.64
Total ed. 15+, 1970	6.09	5.44	5.24	5.26
Primary ed. 15+, 1970	4.46	4.10	4.23	4.27

Note: Table shows the values of indicator variables and the average pre-Pinochet outcome variable for real and synthetic Chile. Average GDP is an average over the pre-Pinochet years chosen for the control. GDP per capita is measured in 2010 dollars. Population growth is in percentage points. Government share is a fraction of GDP, in percentage points. Polity and Executive Constraints follow the polity scores scale. The measure of durability and the education variables is years.

APPENDIX C

CHANGE IN INDICATORS

Here, I consider three different sets of predictors. They provide a good fit both to the covariates used to distribute the weights for each control and to the pre-Pinochet observations on GDP per capita according to the root mean squared error. Table C.1 presents the results of the three-alternative set of covariates. The alternative model 1 considers average population growth 1960-72, and education variables of the primary synthetic control, but removes the indicators on openness for both 1960 and 1972 and adds average GDP per capita from the four years chosen for the original control, and measures of government and investment shares of GDP from 1960 and 1972. Alternative model 2 includes the same indicators than Alternative 1 and adds openness indicators and indicators from Polity IV. However, it removes the four educational variables. The alternative model 3 includes the same indicators than alternative 2, but it adds three more covariates from Polity IV which refer to 1960. The results of the alternative models 2 and 3 show that the removal of the educational variables and the inclusion of the polity V has a positive influence on the pre-Pinochet fit. Alternative model 1 has a pre-Pinochet fit almost as good as the baseline model, the algorithm does not change the distribution of weights of the countries that compose the control. Table A.6 reports the indicators of the alternative models and compare them to those of actual Chile.

Table C. 1 Synthetic Control Weights, Alternative Models

	Alt. 1	Alt. 2	Alt. 3
Argentina	3.20	0.00	0.00
Bolivia	0.00	0.00	0.00
Brazil	0.00	0.00	0.00
Colombia	0.00	0.00	0.00
Costa Rica	0.00	45.00	45.00
Dominican Republic	0.00	0.00	0.00
Ecuador	0.00	0.00	0.00
Guatemala	0.00	0.00	0.00
Honduras	0.00	0.00	0.00
Mexico	0.00	0.00	0.00
Nicaragua	0.00	0.00	0.00
Panama	53.20	38.10	0.00
Peru	0.00	0.00	38.10
Portugal	0.00	0.00	0.00
Spain	0.00	9.38	0.00
Uruguay	43.60	10.60	10.70
Venezuela	0.00	6.30	6.30
Model fit pre-intervention			
RMSPE	0.097	0.079	0.079

Note: Columns present the weights assigned to each country in the synthetic controls for Chile. Each column includes a synthetic control for a different outcome variable. A dash (–) indicates that the country is not available in the dataset for the given comparison. Weights are in percentage points. Rounding errors may prevent columns from summing to 100. The root square error (RMSPE) indicates the average pre-intervention prediction error.

Table C. 2 Indicator fits, Alternative Models

		Alt. 1	Alt. 2	Alt. 3
Variables	Actual Chile	Synth. Chile	Synth. Chile	Synth. Chile
Avg. GDP per capita	4037.13	4218.48	4248.00	4253.54
Pop. Growth Rate	2.10	1.97	2.78	2.78
Openness, 1960	29.17	–	43.00	43.03
Openness, 1972	23.06	–	46.83	46.86
Total ed., 15+, 1960	5.22	4.75	–	–
Primary ed., 15+, 1960	3.98	3.83	–	–
Total ed., 15+, 1970	6.09	5.46	–	–
Primary ed., 15+, 1970	4.46	4.12	–	–
GDP per capita Growth Rate	2.26	1.75	1.16	1.16
Inv. Share 1960	0.12	0.17	0.14	0.14
Inv. Share 1972	0.10	0.22	0.12	0.12
Gov. Share 1960	0.18	0.13	0.15	0.15
Gov. Share 1972	0.21	0.18	0.20	0.20
Polity II, 1972	6	–	2.08	2.08
Durability, 1972	17	–	25.56	25.56
Exec. Constraints, 1972	5	–	4.23	4.23
Polity II,1960	9	–	–	7.64
Durability, 1960	1	–	–	20.96
Exec. Constraints, 1960	6	–	–	5.90

Note: Table presents the values of indicator variables and the average pre-Pinochet outcome variable for real and synthetic Chile. Average GDP is an average over the pre-Pinochet period, 1960–72. GDP per capita is measured in 2010 dollars. Population growth is in percentage points. Government share is a fraction of GDP, in percentage points. Polity and Executive Constraints follow the polity scores scale. The measure of durability and the education variables is years.