

# A farewell to arms: The Long run developmental effects of Costa Rica's army abolishment

WORKING PAPER: DO NOT CITE WITHOUT PERMISSION

Alejandro Abarca\*

Suráyabi Ramírez†

October, 2018

## Abstract

This article estimates the causal long-term developmental effects of Costa Rica's constitutional abolishment of its army in 1949 after the 1948 civil war. This is done by performing synthetic control estimates and analyzing the political history of Costa Rica in the 1940s and 1950s. We find that upon the abolishment of the army, Costa Rica's annual average per capita GDP growth increased from 1.42% to 2.28% in the 1950-2010 period relative to a counterfactual Costa Rica that did not abolish its army. This implies that Costa Rica doubled its per capita GDP every 30 years rather than every 49. These estimates are robust to different model specifications and we show that this shock is exclusive to Costa Rica in Latin America. Furthermore, we provide evidence that the positive effects associated with this increase in the per capita GDP growth rates have endured over time; namely because the abolition of the army granted a political and institutional context that allowed the country to devote more resources to public spending, which in turn contributed to its long run development. Our case study findings are evidence that committing to peace and democracy pay off in the long run.

---

\*Observatory of Development at the University of Costa Rica. Address: Montes de Oca, San Pedro, from the Fuente de la Hispanidad 100mts East, 100mts North, 100mts East and 25mts North. Telephone: +50684200731. Email: alejoag2@gmail.com

†Observatory of Development at the University of Costa Rica. Address: Montes de Oca, San Pedro, from the Fuente de la Hispanidad 100mts East, 100mts North, 100mts East and 25mts North. Telephone: +50688653606. Email: surayabi.ramirez@gmail.com

# 1 Introduction

Following the end of the civil war in 1948, Costa Rica abolished the country's army in its 1949 Constitution. Ever since and up to this day, Costa Rica has achieved some of the highest living standards and development indicators in Latin America. Furthermore, Costa Rica has not had dictatorships nor armed conflicts since the abolishment of its army, unlike most countries in the region. Although it is tempting to attribute these achievements to the abolishment of the armed forces, up to this day, there is no quantitative evidence of this.

In this paper, we estimate the causal effect of Costa Rica's army abolishment on its long-run development. For this, we perform synthetic control estimates, which is a method that has been employed in small sample comparative case studies (Abadie and Gardeazabal, 2003; Abadie et al., 2010; Abadie et al., 2011; Abadie et al., 2015). More explicitly, we use long time series data to systematically choose comparison Latin American countries that did not abolish their armies and compare their GDP per capita with Costa Rica over time. In tandem with this quantitative technique, we conduct a thorough analysis of Costa Rica's political history of the 1940s and 1950s. This joint approach allows us to attribute causality to our results.

Our estimates show that Costa Rica's per capita GDP grew at an average annual rate of 2.28% in the 1950-2010 period -the period after the abolishment of the army-, while the synthetic control would have grown at an annual rate of 1.42% during the same period. In other terms, Costa Rica approximately doubles its per capita GDP every 30 years rather than every 49 years if it had not abolished its armed forces. Furthermore, we show that the political history of Costa Rica is clear at indicating that the absence of an army is what allowed the fostering of policies and institutions that have endured over time and contributed to the long-run development of the country. Hence, our estimates along with the historical evidence show that the constitutional abolishment of Costa Rica's army yielded a long-term legacy on the economic development of the country.

The negative economic and political outcomes of wars and conflicts have been widely studied and acknowledged (Murdoch and Sandler, 2002; Nafziger and Auvinen, 2002; Abadie and Gardeazabal, 2003; Murdoch and Sandler, 2004; Bilmes and Stiglitz, 2006; Collier, 2011; Gates et al., 2012). Literature of the negative effects of military expenditure on economic growth and development is also available (Knight et al., 1996; Collier, 2006; Yakovlev, 2007; Alptekin and Levine, 2012; Kollias and Paleologou, 2017). While the former literature focuses on the confrontational use of guns and the latter on the question "Guns or butter"?, we contribute to the literature by studying the question "Guns or no guns"?

Our work also contributes to the literature through its uniqueness. To the best of our knowledge, there is no other study that estimates the developmental impact of relinquishing a country's armed forces. Furthermore, the case study presented

here allows validating or refuting hypothesis and results that have arisen from cross-country studies. Since we focus on the effect of a single country, our results circumvent heterogeneity from cross-country estimates. Additionally, as will be explained below, the abolishment of the army in Costa Rica had no direct economic motivation. It was the result of a series of internal political conflicts and external geopolitical factors that developed over a decade and involved many national and international actors. Therefore, it is very unlikely that our results are due to endogeneity issues.

The paper is structured as follows. In the following section, we explain the synthetic control method used in this research. Then, we discuss the data and sample used in our model. In the fourth section, we provide a brief history of Costa Rica during the 40s and 50s. This part of the document presents all the historical and political facts that allow us to attribute causality to our estimates. The fifth section shows our results and the placebo estimates as robustness checks. The sixth section discusses our results. And finally, the seventh section concludes.

## 2 Synthetic control method

This research follows a synthetic control method estimation, which has been recently used in small sample comparative case studies (Abadie et al., 2015; Abadie et al., 2011; Abadie et al., 2010; Abadie and Gardeazabal, 2003) and where there is one unit that has been treated or received a shock instead of many. In one unit cases, it is not easy to properly identify a counterfactual to determine the effect of a public policy or shock given the small sample nature of case studies. Therefore, to address this issue, the synthetic control method creates a counterfactual (also known as the synthetic unit) for the unit of interest by estimating a weighted average of all the potential comparison units that best resemble the characteristics of the case of interest.

More specifically, assume a sample of  $J + 1$  units, where  $j = 1$  is the treated unit (i.e. the unit exposed to the event or intervention of interest) and all the units from  $j = 2$  to  $j = J + 1$  are the potential non-treated comparison units that constitute the donor pool. Now, the method considers two time periods:  $T_0$  and  $T_1$ . Where the former is the pre-treatment period for  $j = 1$ , and the latter is the period after the treatment. The unit of interest is exposed to a treatment, shock or intervention in any period after  $T_0$ , and the objective of the estimator is to measure the effect of the event or intervention of interest on some post-intervention in  $T_1$ . Given this set up, the synthetic control method works on the premise that the pre-intervention characteristics of the treated unit can often be much more accurately approximated by a combination of untreated units than by any single untreated unit. Thus, the synthetic unit is a weighted average of the units in the potential comparison units that were not treated in  $T_0$ . A synthetic control can be represented as a  $(J \times 1)$  vector of weights  $W = (w_2, \dots, w_{J+1})'$ , with  $0 \leq w_j \leq 1$  for  $j = 2, \dots, J$  and  $w_2 + \dots + w_{J+1} = 1$ .

Then, selecting a  $W$  is equivalent to selecting a synthetic control.

$W$  is selected in such a way that the characteristics of the treated unit are best resembled by the synthetic control. If  $X_1$  is a  $(k \times 1)$  vector containing the values of the pre-treatment characteristics of the treated unit, and  $X_0$  is a  $(k \times J)$  matrix of the values of the same variables for the units in the donor pool, then the synthetic control method minimizes  $X_1 - X_0W$ , which is the difference between the values of the treated unit and the weighted values of the comparison units. Formally, the method minimizes the root mean squared prediction error (RMSPE):

$$\sum_{m=1}^k v_m (X_{1m} - X_{0m}W)^2$$

Where  $v_m$  is a weight that reflects the relative importance assigned to the  $m$ -th variable when measuring the difference between  $X_1 - X_0W$ <sup>1</sup>.

In comparison to a regression approach method, the synthetic control restricts the coefficients of the linear combination of each comparison unit to be between zero and one. Therefore, extrapolation outside the data is not allowed under this method, i.e. counterfactuals based on a linear regression may extrapolate beyond the support of comparison units, hence providing untruthful estimates of the counterfactual. In case studies such as this research, this could be very troublesome, where it is more likely to incorrectly estimate this counterfactual due to the existence of only one treated unit and many untreated units. Therefore, synthetic control methods provides better and more reliable estimates of the counterfactual in cases as the one studied in this work.

### 3 Data and sample

We use annual country level panel data for most of all the Latin American countries for the 1920-2010 period. Our data for the synthetic control estimates comes from the Montevideo-Oxford Latin American (MOxLAD) Economic History database. This database contains statistical series for a wide range of economic and social indicators covering twenty countries in the region for the twentieth century up to today. Of particular interest, this database provides series on national accounts, infrastructure, demography and labor force variables that are comparable between the countries in the region.

After excluding Bolivia, the Dominican Republic, Haiti, Panama and Paraguay for lack of data in the pre-treatment period, our donor pool of unaffected units consists of the remaining Latin American countries. Specifically, the list of potential control countries in the donor pool used to construct the weighted average of the synthetic Costa Rica in this research is: Argentina, Brazil, Chile, Colombia, Cuba, Costa Rica,

---

<sup>1</sup>For complete proofs and display of the mathematical background of this method, refer to (Abadie et al.,2015; Abadie et al.,2011; Abadie et al.,2010; Abadie and Gardeazabal, 2003).

Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Uruguay and Venezuela. For our estimates, we use the following variables:

- **Per capita GDP in PPP 1990 US dollars:** this is the outcome variable of this research.
- **Population density:** total population divided by the country's area in square kilometers.
- **Telephone density:** amount of telephone lines divided by the total population of the country.
- **Car density:** total amount of cars divided by the total population of the country.
- **Railway density:** length of open railways in kilometers divided by the country's area in square kilometers.
- **Road density:** length of routes in kilometers divided by the country's area in square kilometers.
- **Manufacturing value added:** manufacturing value-added as a percentage of the country's GDP.
- **Agriculture value added:** manufacturing value-added as a percentage of the country's GDP.
- **Trade openness:** exports plus imports as percentage of GDP.
- **Index of unit value of imports:** index of price of imports, generally constructed using the Laspeyres formula.
- **Index of unit value of exports:** index of price of exports, generally constructed using the Laspeyres formula.
- **Foreign direct investment as percentage of GDP (FDI):** total foreign direct investment divided by the country's GDP.
- **External debt as percentage of GDP:** total external debt divided by the country's GDP.
- **Land area:** country's total area in square kilometers<sup>2</sup>.
- **Inflation:** annual inflation rate.
- **Primary:** percentage of the population in primary school.
- **Secondary:** percentage of the population in secondary.

This set of predictor variables are all positively correlated with the economic activity of a country and are expressed in the same terms for every country.

---

<sup>2</sup>This variable is included to favor countries with similar land areas to Costa Rica in the synthetic control estimates. Nevertheless, the results are not affected if this variable is excluded from our estimates.

## 4 A brief history of the abolishment of the army and its aftermath

To understand the causes that led to the abolishment of the army and its long-term consequences, it is crucial to comprehend the actors and main events present during the 1940s and 1950s. This historical overview constitutes together with the synthetic control estimates our methodological approach that allows us to attribute causality of the abolishment of the armed forces on Costa Rica's long run development. This section is divided into two parts. The first describes all the events that led to the civil war. While the second part focuses on the abolishment of the army and its aftermath.

### 4.1 1940-1948: Political alliances, social reforms and violence

In 1940 Rafael Ángel Calderón Guardia won the presidential elections with almost 85% of the votes with the National Republican Party, which was the most powerful party of the time (Díaz, 2015). Unlike its liberal predecessors, Calderón developed reforms inspired by Catholic social doctrine that laid the foundations of the welfare state (Molina and Palmer, 2017). These reforms included the creation of the University of Costa Rica and the *Caja Costarricense del Seguro Social*, the institution in charge of the majority of public health care provision services until this day<sup>3</sup>. Other labor rights protections were given constitutional enshrinement such as the right to a minimum wage, the right to form unions, the right to strike, the right to have health insurance and as well as the establishment of legal courts to litigate work-related problems (Salazar, 1995; Díaz, 2015).

Within this context, and in the midst of World War II, these reforms were supported by the Communist Party and the Catholic Church. The Communist Party recognized the importance of the government reform and supported the new legislation. While the Catholic Church publicly appropriated the social reform and presented it as part of Catholicism's teachings, reflected in the papal encyclicals of Leo XIII and Pius XI (Díaz, 2015). The government reciprocated the support of the Catholic Church by repealing the legislation that the liberals had approved in the nineteenth century, which limited the public place of the Catholic Church in Costa Rican society and its influence in public education (Molina, 2016; Molina and Palmer, 2017).

However, the Calderón administration received fierce opposition on several fronts, including his own party. The Republican Party was thus divided into two factions, one that supported the prior president Leon Cortés (*Cortesistas*), and the faction

---

<sup>3</sup>Likewise, the law made compulsory the coverage of health, old-age, life and maternity insurance for every worker (Díaz, 2015).

that supported Calderón (*Calderonistas*). When Calderón was launched as a candidate, he had the support of the *Cortesistas* on the condition that Calderón accepted Cortés to run again as the party's nominee in 1944 (Molina, 2016). Nonetheless, once in power, the *Calderonistas* sought to promote an electoral reform that would allow the re-election of Calderón and also refused in 1941 to support the candidacy of Otto Cortés (son of León Cortés) as president of the National Congress (Díaz, 2015). For Cortés, it was clear that the *Calderonistas* sought to consolidate their dominance within the Republican Party and in 1941 he decided to leave and found the Democratic Party.

Adding to the inner conflicts of the Republican party, business sectors and the oligarchy opposed these Calderón's reforms because they considered them to be communist, excessively costly and designed only for electoral purposes (Salazar, 2012). In addition, between December 1941 and July 1942, as part of the government's WWII commitments with the United States, the government arrested, exiled and confiscated the properties of individuals accused of being associated with the Axis. This generated great repudiation among a sector of citizens with German, Italian and Spanish ancestry, which would eventually join the government's opposition (Solís, 2008; Diaz, 2015; Molina, 2016).

These political and social tensions escalated during the presidential term of Calderón's successor, Teodoro Picado. Picado's electoral victory over León Cortés was considered fraudulent by the opposition (Lehoucq and Molina, 2002). During his presidential term between 1944 and 1948, political violence was recurrent (Muñoz, 1990b). There were armed attacks on buildings of political parties, newspapers and worker unions, murder attempts on politicians, and bomb placements in military headquarters, aqueducts, power lines and railways (Solís, 2008; Diaz, 2015). There were even failed assassination attempts against Calderón Guardia and the leader of the communist party Manuel Mora (Diaz, 2015). There was also an unsuccessful revolt attempt in 1946 planned by Fernando Castro, a wealthy coffee grower and lawyer of the United Fruit Company (Bowman, 2002; Lehoucq and Molina, 2002), and a highly violent general strike widely supported by the government's opposition (Diaz, 2015).

Picado was aware of a hardline opposition group that wanted to overthrow his government. As a way to reduce political polarization, he sought to reach out to opposition moderates by granting electoral safeguards (Lehoucq and Molina, 2002; Diaz, 2015). However, these attempts to avoid violent conflict had a major setback when León Cortés died in March of 1946. Cortés, in spite of his attacks to the government, sought to achieve a negotiated pacific solution to all the existing political turmoil. If there had been an accord between Picado and Cortés, the opposition hardliners would have been isolated (Solís, 2008; Díaz, 2015). Upon Cortés' death, the opposition appointed Otilio Ulate as their next presidential candidate, the editor of the newspaper *Diario de Costa Rica*, a well known pro-opposition newspaper (Rovira, 2000).

Violence and tensions kept on rising after León Cortés' death. Led by Ulate, opposition forces publicly issued threats to engage in civil disobedience or even start a war unless fair elections were held (Lehoucq and Molina, 2002; Diaz, 2015). By this time, it was clear to many that the country was heading towards a civil war, and even the U.S ambassador to Costa Rica in October 1947 did not support either Ulate or Calderón -who was seeking re-election- in the upcoming elections, because *“neither of them is the candidate the country needs. Both are willing to resort to arms if they do not win the elections”* (Schifter 1986, 226). Even Otilio Ulate himself wrote that *“The country is in a dilemma; either it must abandon the suffrage or have a civil war to restore honor and integrity to the public”* (*New York Times*, 4 February 1947, quoted in Bowman 2002, 89).

## 4.2 1948-1955: civil war, the abolishment of the army and its aftermath

In the midst of this political turbulence and violence, presidential elections were held on February of 1948, where Rafael Calderón Guardia failed in his bid for re-election against Otilio Ulate Union's party. The Republican Party challenged the election results at the Congress -where they had majority-, and annulled them. This event triggered a civil war, where José Figueres Ferrer, an exiled political figure in 1942 and leader of the revolutionary movement arrived to Costa Rica with revolutionary forces supported by other military figures in Central America and the Caribbean. This group was known as “The Caribbean Legion”, and aimed to overthrow the authoritarian regimes of Honduras, Nicaragua and the Dominican Republic<sup>4</sup> and replace them with democratic governments (Muñoz, 1990; Solís, 2008; Díaz, 2015).

By April of 1948, president Picado resigned and signed a peace accord, where the victorious revolutionary army settled a deal with Otilio Ulate under two conditions: i) Figueres would govern the country under a governing board for 18 months, where after said period he will give back the power to Ulate, and ii) then elections would be held on December 8<sup>th</sup> 1948 to create a new Constituent Assembly to reform the constitution of 1871. During these 18 months, in the absence of a Congress and an active constitution, the governing board served as the sole authority in the country and thus ruled without the need to consult any social group or political power.

While in power, the Governing Board openly persecuted communists and non-communists supporters of Calderón and Picado. The Communist party was outlawed, properties were seized, citizens were jailed, the public sector was purged of Calderonistas, and others were sent into exile and even executed. In addition, the governing board also enacted and implemented a series of reforms that angered the agro-export elite in the country and split the opposition groups that rallied against

---

<sup>4</sup>Anastasio Somoza in Nicaragua, Tiburcio Carías in Honduras and Rafael Trujillo in the Dominican Republic.

Calderón in 1947 and 1948. These reforms included an increase in wages for workers in coffee and sugar cane plantations, the nationalization of banks, a new contract with the United Fruit Company that gave Costa Rica nearly 50% of all profits and a 10% tax on capital gains of more than about \$8.000 (Rovira, 2000; Bowman, 2002; Díaz, 2015; Molina and Palmer, 2017).

It was transparent that Figueres would not destroy Calderon's social reforms, but rather enact new ones and expand on the ones that already existed (Rovira, 2000). This situation and the set of reforms of the governing board had the country elites and their newspapers completely opposed Figueres's new project (Bowman, 2002). Furthermore, it is also very clear that although Figueres supported Ulate, he did not fight for him or any other candidate: "*You are wrong if you believe that I come to hand the presidency to Ulate, nor to any other corrupt politician, I come to transform this country*" (Schifter 1986, 274).

There were also great animosities within the new government's military, where some of its high rank officers opposed the governing board's socioeconomic project. Similarly, there were clashing interests between the members of the Costa Rican army and members of the Caribbean Legion forces. While the former had no interest in overthrowing the dictatorships in the region, the latter remained steadfast on their campaign in the region (Muñoz, 1990). Figueres even attempted to purchase weapons to rebuild the army. However, the United States military mission in Central America was reluctant to allow Figueres to buy these weapons unless he clarified the intended purposes of these arms and guaranteed that he would no longer continue the Caribbean Legion's campaign. Therefore, although rebuilding the armed forces was a priority, it was not possible to assemble an army aligned with the interests of the new government. Under these circumstances, on the 1<sup>st</sup> of December of 1948, the abolishment is announced and later enshrined in the 1949 Constitution (Muñoz, 1990).

However, on December 11, 1948, Rafael Ángel Calderón Guardia and other political exiles invaded the country from Nicaragua with the support of its dictator Anastasio Somoza. The governing board repealed the attack while invoking Article 3 of the Inter-American Treaty of Reciprocal Assistance of the Organization of American States (OAS)<sup>5</sup> (Solís, 2006), also known as the Rio Treaty. In a nutshell, said article calls for mutual defense in the case of the attack on a member nation.

The OAS Council resolution condemned Nicaragua for helping revolutionary groups invade Costa Rica, and it also indicated that Caribbean Legion was still operating

---

<sup>5</sup>ARTICLE 3: 1. The High Contracting Parties agree that an armed attack by any State against an American State shall be considered as an attack against all the American States and, consequently, each one of the said Contracting Parties undertakes to assist in meeting the attack in the exercise of the inherent right of individual or collective self-defense recognized by Article 51 of the Charter of the United Nations.

in Costa Rica and was planning to overthrow some of the region's governments. The council ordered both governments to guarantee to adhere to principles of non-intervention. This resolution was consequential, because it allowed Figueres to free itself from its commitments with the Caribbean Legion, to which it had already given economic support and a training camp (Bowman, 2002; Diaz, 2015).

In April 1949, another failed coup<sup>6</sup> against the Governing Board occurred. The coup plotters, -which included the Security Minister of the Governing Board and the first commander of the artillery barracks- demanded the of abolition of bank nationalization and the 10% capital tax, and the removal of the members of the Governing Board responsible for these measures (Solís, 2006). After a few hours, another group of soldiers regained control and forced the rebels to surrender (Díaz, 2015).

The new Costa Rican army could not emerge under the internal conflicts of the Governing Board and external pressures aforementioned, which ultimately led to the constitutional abolition of the army. If these pressures were not resolved, the Governing Board would have been condemned to political isolation, and any possibility of consolidating a reformist project would have been blocked (Muñoz, 1990). Moreover, the abolishment not only allowed the survival of the Governing Board's project, it also guaranteed Ulate that he would be given back the power in time and fostered a favorable environment of peace and harmony, which would boost the probabilities of the Social-Democratic candidates reaching the majority of votes required to represent in the Constituent Assembly (Muñoz, 1990).

After the Governing Board ruled Costa Rica for 18 months, Otilio Ulate came back to power as president from 1949 to 1953. Although Ulate was a representative of the oligarchic sector, his ruling was subject to two significant constraints that marked the scope of his government. First, even though he was a representative of the elites, he was back in power due to Figueres' uprising and he was governing under the conditions of the pact that put an end to the civil war. Second, he ruled with the new constitution approved by the Constituent Assembly, which preserved the social reforms approved in the 1940s, expanded the economic functions of the State, and created new institutions to strengthen political stability and reduce the imbalance of power held by executive power present in the previous Constitution of 1871. Subject to these conditions, Ulate focused on bringing fiscal and monetary stability to the country as well as enacting the laws that the new Constitution mandated (Rovira, 2000).

In 1954, José Figueres Ferrer returned to power as an elected president, and he was met with numerous political enemies. In particular, the losers of the civil war

---

<sup>6</sup>This coup d'état is known as the *Cardonazo*, as a reference to Édgar Cardona who was the acting Minister of Security and leader behind the attempted overthrow. Paradoxically, Cardona is the one who convinced Figueres to abolish the army in 1948 (Muñoz, 1990).

(*calderonistas* and communists) and the Costa Rican business sector which feared the more active role assumed by the state in the economy after the civil war (Bowman, 2000). Moreover, the rivalry between Otilio Ulate and Figueres reached a point of no return between May and June of 1954. The 1949 Constitution established that a president must wait 8 years to run for an additional term. During the government of Ulate between 1949-1953, he held a successful plebiscite to change that waiting period to 4 years, which meant he could return to power again in 1958. However, in May 1954, the Liberation National Party (PLN in spanish) -led and founded by Figueres- controlled congress, and voted against this reform and the constitutional change was rejected. The opposition saw this act as an attempt by the PLN to stay in power at all costs, and from that moment, Ulate also became an enemy of the government (Bowman, 2000; Bowman, 2002).

Figueres was portrayed as communist to the United States by the opposition. This enmity was reflected in the newspapers and in diplomatic circles, while the government counteracted these actions through diplomatic actions. In January of 1955, these political tensions led to an armed uprising in the north of the country and an armed invasion from Nicaragua with the aid of Anastasio Somoza's government. Faced with this situation, Figueres and his diplomats fiercely presented the invasion from Nicaragua and the armed uprising in the north as an external attack to Costa Rica in order to invoke again Article 3 of the Rio Treaty. Anew, The Organization of American States (OAS) aligned with Costa Rica to invoke this article and saved the government from the attempted overthrow (Bowman, 2000; Bowman, 2002).

This second failed attempted overthrow by Calderón Guardia sent a clear message to all the political actors in Costa Rica. Confronting internal enemies with external resources -as Figueres did in the civil war- was no longer possible (Solís, 2006). The attempt to carry out an armed failed because the opposition had the will to overthrow Figueres, but not the means (Bowman, 2002).

In this political environment, there was no consolidated democracy or confidence in the electoral process. Quite the contrary, the first elected government after the enactment of the new constitution was at the brink of being overthrown. If there had been a national army, the opposition would not have needed to ally with Somoza and Figueres would not have been able to request the help of the OAS. What ultimately protected Figueres and led to the eventual consolidation of Costa Rican democracy was simple: the lack of an army to carry out a coup d'état (Bowman, 2000; Bowman, 2002).

## 5 Constructing a synthetic control with Latin American countries

This section estimates the effect of the abolishment of Costa Rica’s army in 1949 in its long-run development approximated by its Per capita GDP level. The synthetic Costa Rica is constructed as a weighted average of potential donor Latin American countries. Where the weights are selected in such a way that it best mirrors the values of the set of predictors of Costa Rica’s per capita GDP before the constitutional abolishment of the army.

The results are displayed in Table 1, which compares the pretreatment characteristics of the actual Costa Rica with that of the synthetic Costa Rica, as well as the mean values for the donor pool and the synthetic control weights given to each variable in order from the highest to the lowest weight.

**Table 1**  
Pre Costa Rica’s army abolishment characteristics, 1920-1949

|                                    | Latin<br>America<br>sample | Costa Rica | Synthetic<br>Costa Rica | Synthetic<br>control<br>weights |
|------------------------------------|----------------------------|------------|-------------------------|---------------------------------|
| Agriculture value added            | 0.332                      | 0.398      | 0.400                   | 0.243                           |
| Land area                          | 1281699                    | 51060      | 245964                  | 0.2313                          |
| Car density                        | 0.008                      | 0.005      | 0.004                   | 0.1082                          |
| External debt as percentage of GDP | 0.53                       | 0.36       | 0.32                    | 0.0966                          |
| Railway density                    | 0.012                      | 0.013      | 0.015                   | 0.0732                          |
| Secondary                          | 0.003                      | 0.002      | 0.002                   | 0.0656                          |
| Index of unit value of exports     | 47                         | 32         | 39.48                   | 0.0638                          |
| FDI as percentage of GDP           | 0.32                       | 0.42       | 0.40                    | 0.0398                          |
| Telephone density                  | 0.009                      | 0.005      | 0.005                   | 0.0329                          |
| Inflation                          | 0.39                       | 0.41       | 0.44                    | 0.031                           |
| Manufacturing value added          | 0.135                      | 0.100      | 0.103                   | 0.01083                         |
| Primary                            | 0.08                       | 0.09       | 0.06                    | 0.0031                          |
| Road density                       | 0.0000                     | 0.0001     | 0.0001                  | 0                               |
| Trade openness                     | 0.425                      | 0.585      | 0.437                   | 0                               |
| Index of unit value of imports     | 50                         | 49         | 46.25                   | 0                               |
| Population density                 | 0.016                      | 0.013      | 0.030                   | 0                               |

Source: Authors’ estimates using MOxLAD database.

The weights chosen by the model indicate that the five most important predictors of GDP per capita are the Agriculture value added (0.243), Land Area (0.2313), Car density (0.1082), External debt as percentage of GDP (0.0966) and Railway density (0.0732). This is a result of a weighted average of Honduras (35.5%), El Salvador (24.9%), Guatemala (15.6%), Chile(7.9%), Uruguay (6.5%), Peru (5.7%), Colombia(3.7%) and Nicaragua (0.2%). These weights are not unexpected, as more than a 75% of the synthetic control weights come from other Central American countries. In addition, the estimates include Chile and Uruguay, which are countries that have

achieved similar developmental outcomes as Costa Rica. All other countries in the donor pool obtain zero weights<sup>7</sup>.

Figure 1 plots Costa Rica's per capita GDP and its synthetic control estimate. After the abolishment of the army in 1950, the two lines begin to diverge noticeably. While the per capita GDP in the synthetic Costa Rica continued a modest upward trend, the real Costa Rica experienced a sharp increase. This gap suggests that the abolishment of the army had a sizable positive effect on the per capita GDP of Costa Rica.

**Figure 1**  
Per capita GDP in 1990 PPP US dollars for Costa Rica

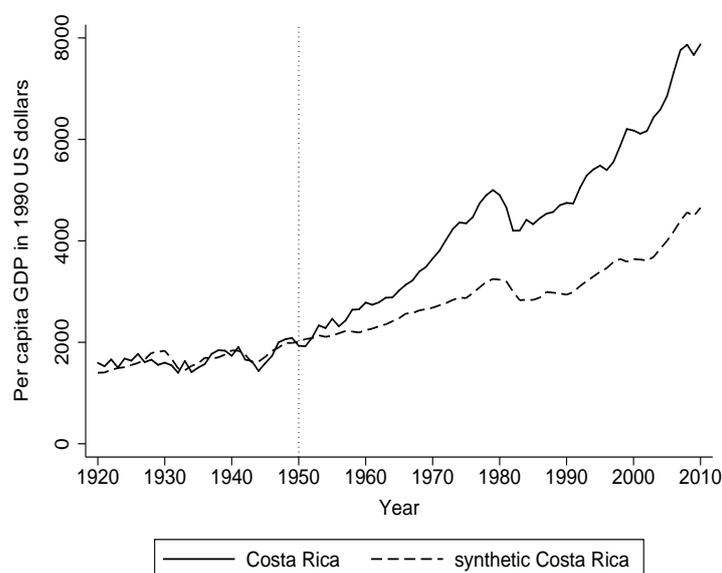


Table 2 further examines into this increase of Costa Rica's per capita GDP. It presents the average growth rate of this variable and the number of years it would take the country to double its per capita GDP. In the final two columns, we present the difference in these growth rates and number of years between periods.

---

<sup>7</sup>Other synthetic control estimations with different sets of variables and length of pre-treatment periods were performed. The results do not vary significantly.

**Table 2**  
Average per capita GDP growth rate and implied doubling time  
years by period

| Country           | Before abolishment<br>1919-1949 |                           | After abolishment<br>1950-2010 |                           | Differences             |                           |
|-------------------|---------------------------------|---------------------------|--------------------------------|---------------------------|-------------------------|---------------------------|
|                   | Per<br>capita<br>growth         | Doubling<br>time<br>years | Per<br>capita<br>growth        | Doubling<br>time<br>years | Per<br>capita<br>growth | Doubling<br>time<br>years |
| Argentina         | 1.53                            | 45.57                     | 1.46                           | 47.66                     | -0.07                   | -2.09                     |
| Brazil            | 2.45                            | 28.59                     | 2.53                           | 27.77                     | 0.07                    | 0.83                      |
| Chile             | 1.42                            | 49.05                     | 2.28                           | 30.76                     | 0.86                    | 18.29                     |
| Colombia          | 2.73                            | 25.76                     | 1.94                           | 36.08                     | -0.79                   | -10.32                    |
| <b>Costa Rica</b> | <b>1.31</b>                     | <b>53.29</b>              | <b>2.28</b>                    | <b>30.80</b>              | <b>0.97</b>             | <b>22.49</b>              |
| Cuba              | 2.22                            | 31.57                     | 1.30                           | 53.71                     | -0.92                   | -22.14                    |
| Ecuador           | 1.86                            | 37.59                     | 2.14                           | 32.78                     | 0.28                    | 4.81                      |
| El Salvador       | 2.18                            | 32.12                     | 1.15                           | 60.45                     | -1.03                   | -28.33                    |
| Guatemala         | 2.45                            | 28.65                     | 1.26                           | 55.45                     | -1.19                   | -26.80                    |
| Honduras          | 0.36                            | 194.73                    | 1.04                           | 67.02                     | 0.68                    | 127.71                    |
| Mexico            | 0.93                            | 74.91                     | 2.14                           | 32.80                     | 1.21                    | 42.10                     |
| Nicaragua         | 1.18                            | 59.31                     | 0.65                           | 106.29                    | -0.52                   | -46.98                    |
| Peru              | 2.07                            | 33.86                     | 1.76                           | 39.69                     | -0.31                   | -5.83                     |
| Uruguay           | 1.86                            | 37.56                     | 1.74                           | 40.29                     | -0.13                   | -2.73                     |
| Venezuela         | 6.35                            | 11.26                     | 1.04                           | 67.11                     | -5.31                   | -55.85                    |

Source: Authors' estimates using estimates using MOxLAD database.

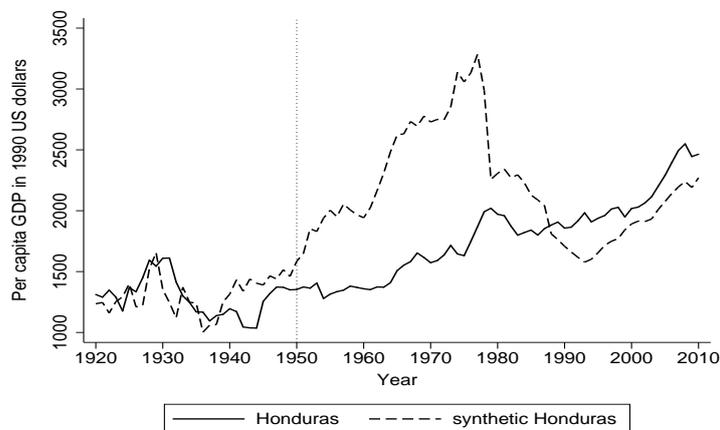
Prior to the abolishment of its army, Costa Rica was the country with fourth lowest GDP per capita growth, and the country with the fourth highest number of years required to double its GDP per capita given its average growth rate between 1919 and 1949. After the abolishment of the army, this reverses and Costa Rica becomes the second best country in each of these indicators. Furthermore, Costa Rica is the country with the second largest difference in per capita GDP growth between the pre and post-treatment periods and the third best performer in lowering the number of years required to double its GDP per capita. These results strengthen that the evidence behind the effect found in Figure 1 is a substantial structural change for Costa Rica and its economic growth path.

## 5.1 Placebo studies

To evaluate the credibility of our results, we have to discard the notion that our results are driven by coincidence or by an event of similar nature that occurred in the donor pool. To address this concern, we performed a series of placebo studies that consist of applying the same method used to compute Costa Rica's synthetic control to other countries that did not abolish their army. The rationale of this exercise is to assess whether the difference found in Figure 1 may have been created by factors

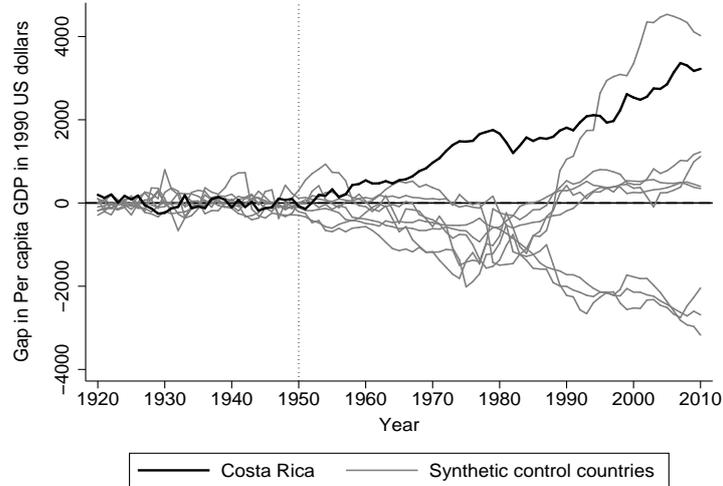
other than the abolition of the army. Figure 2 displays this placebo study for Honduras, which was the country that was assigned the largest weight in the synthetic control estimates. For Honduras, the results do not show an upward pattern in the GDP per capita of Honduras after 1951 as in the case of Costa Rica. Thus, while the data of Honduras is useful at predicting Costa Rica, this is not because both countries went through similar shocks at the same time. Annex 1 shows the placebo studies for the other countries used for the predictor countries from the donor pool, we reach the same conclusions.

**Figure 2**  
Placebo study: Honduras



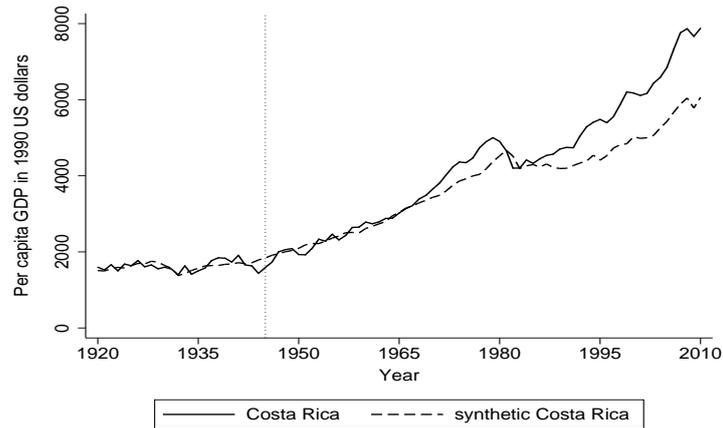
Along similar lines, we also estimated the gap between the real countries and their synthetic counterparts for each member of the predictor countries. In the pre-treatment period, the gap for most countries is close to zero, revealing that the synthetic control method fairly adjusts well for most countries in the sample. In the post-treatment period, Costa Rica is the only country for the next sixty years with a positive steady growth trend. Altogether, these two findings further prove the idiosyncratic shock experienced by Costa Rica in 1950.

**Figure 3**  
Per-capita GDP gaps in Costa Rica and placebos



Lastly, we also conducted “in-time placebos” to discard that there are no large positive estimated effects in years where there was no treatment. This placebo was computed for 1943, which was the year the country promulgated the labor rights reform and is shown in Figure 4. In contrast to the divergence found in 1950, no perceivable effect is found. Similarly, we computed other in-time placebos from 1940 to 1945, and the results are alike.

**Figure 4**  
In-time placebo 1943

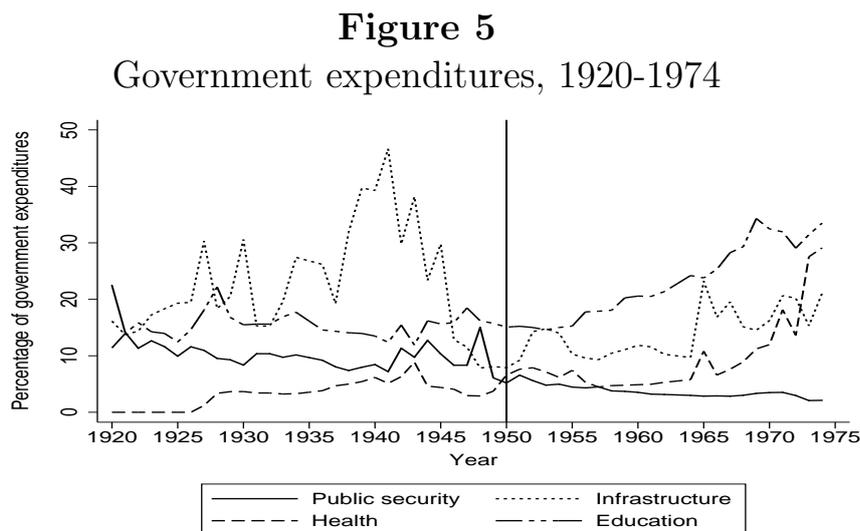


## 6 Discussion and mechanisms

Thus far, our results provide robust empirical evidence to claim that Costa Rica’s army abolishment contributed significantly to the long-run development of the coun-

try. In this section, we discuss the mechanisms through which this shock increased the rate of growth of per capita GDP.

One of the mechanisms that explains our results is the change in government spending. In figure 5 below, we show that after the abolishment of the army, Costa Rica's government started devoting less resources to public security<sup>8</sup> and more to public education, health and infrastructure.



From 1940 to 1948, public security expenditures were on average a 10% of total government expenditures. As soon as the civil war came to an end, it started a decreasing trend for the next 25 years. Infrastructure on the other hand, had a clear decreasing trend during the 40s. This trend was reversed as soon as the civil was over, and from 1950 to 1974 it represented on average a 13.8% of total government expenditures. From 1920 to 1949, Education spending was on average 15% of total government spending. But after the civil war, it started an increasing trend, and by 1969 it ended up representing almost 35% of total government spending. Similarly, health expenditures started increasing in the 1960s, and by 1974 they represented a 29% of total government spending.

The increased allocation of resources to infrastructure, health and education, entailed a growth in government expenditure relative to the size of the economy. In 1950, government expenditures represented 9% of Costa Rica's GDP, and by 1974 it represented 17.7%. Furthermore, in 1950, infrastructure, health and education spending represented 2.6% of Costa Rica's GDP. By 1974, it represented 13.4%.

<sup>8</sup>This spending category constituted the country's military expenditure until 1950. After the abolishment of the army, it included police expenditures and other spending related to national security that did not involve an army.

These larger investments yielded various positive effects on Costa Rica's economy and its general population. For instance, in 1949 the Costa Rican Institute of Electricity was created. During its first year, the installed capacity allowed the generation of 36.637 KW of electricity, but by 1980 this installed capacity had increased to 554.000 KW<sup>9</sup>. Education wise, in 1949 there existed 884 built primary schools in the country. Two years later, this number had increased a 32% to 1175<sup>10</sup>. By 1960, there were 1.561<sup>11</sup>, and by 1974, there were 2.610<sup>12</sup>. Regarding health expenditures, in 1949, 21% of the economically active population were covered by the country's health insurance. By 1965, this coverage had increased to 30% and to 66% in 1978<sup>13</sup>.

In addition to the changes in the economic role of the government, the new constitution included a series of long-lasting institutional changes. One of the main objectives of the 1949 Constitution was to strengthen political stability and reduce the imbalance of power held by the country's President in the previous Constitution of 1871. These ideas led to the creation of autonomous state institutions, which are public institutions that enjoy administrative independence from the executive power, and up to this date are responsible for areas such as state banking, insurance services and electricity supply. The 1949 constitution also gave the Supreme Electoral Tribunal a constitutional status, it created the civil service, and implemented many other institutional changes that have endured since (Dabène, 1992). Therefore, the 1949 Constitution ended up being a redistribution of executive power and government spending in institutions and policies that fostered social development and government transparency and accountability in the long run.

Without a doubt, the new 1949 constitution provided a series of institutional reforms that contributed to the long-run development of Costa Rica. As explained in detail in a previous section, the transition to democracy after the civil war did not happen peacefully nor was it the result of a pact between political leaders moving towards a stable democracy (Bowman, 2001). It was only after 1955 that democracy was effectively consolidated in Costa Rica. Where political stability was fostered due to the fact that there was no longer the possibility to overtake power via armed conflict. Although the new constitution redistributed political power and put in place policies that contributed to Costa Rica's long run development, these advances endured thanks to the political stability granted by the absence of an army.

This also holds true in a comparative perspective, where the history of Latin America has been sadly eloquent enough. Shortly after World War II, Latin America was characterized by various episodes of violence and repression, where democratic ad-

---

<sup>9</sup>Oficina de Planificación Económica. (1982). *Evolución Socioeconómica de Costa Rica 1950-1980*. Editorial UNED. San José, Costa Rica.

<sup>10</sup>Ministerio de Educación Pública. (1952). *Memoria del Ministerio de Educación Pública 1951*. San Jose, Costa Rica.

<sup>11</sup>Ministerio de Educación Pública. (1964). *Memoria Anual 1963*. San Jose, Costa Rica.

<sup>12</sup>Ministerio de Educación Pública. (1973). *Memoria 1973*. San Jose, Costa Rica.

<sup>13</sup>Caja Costarricense de Seguro Social. (1979). *Memoria 1978*. San Jose, Costa Rica.

vance was for the most part contained, and in some cases reversed. In the end, only Costa Rica (since the 1948 Civil War) maintained democratic institutional continuity in the postwar period (Bethell and Roxborough, 1997). This is consistent with the fact that Costa Rica barely experienced political and civil violence since 1951. We evidence this in table 3 below, where the number of coups d'état and episodes of political violence in Latin America since 1951 is shown.

**Table 3**

Number of Coups d'état and years of political violence involving the state, 1951-2010

|                    | Coups<br>d'état | Internat-<br>ional |              | Civil         |              | Ethnic        |              |
|--------------------|-----------------|--------------------|--------------|---------------|--------------|---------------|--------------|
|                    |                 | Vio-<br>lence      | War-<br>fare | Vio-<br>lence | War-<br>fare | Vio-<br>lence | War-<br>fare |
| Argentina          | 15              | 0                  | 1            | 1             | 5            | 0             | 0            |
| Bolivia            | 17              | 0                  | 0            | 1             | 0            | 0             | 0            |
| Brazil             | 2               | 0                  | 0            | 1             | 0            | 0             | 0            |
| Chile              | 2               | 0                  | 0            | 2             | 3            | 0             | 0            |
| Colombia           | 1               | 0                  | 0            | 36            | 10           | 0             | 0            |
| Costa Rica         | 1               | 0                  | 0            | 1             | 0            | 0             | 0            |
| Cuba               | 1               | 1                  | 0            | 0             | 3            | 0             | 0            |
| Dominican Republic | 5               | 0                  | 0            | 1             | 0            | 0             | 0            |
| Ecuador            | 7               | 1                  | 0            | 0             | 0            | 0             | 0            |
| El Salvador        | 4               | 0                  | 1            | 0             | 14           | 0             | 0            |
| Guatemala          | 12              | 0                  | 0            | 1             | 0            | 0             | 31           |
| Honduras           | 7               | 7                  | 1            | 21            | 0            | 0             | 0            |
| Mexico             | 0               | 0                  | 0            | 5             | 0            | 4             | 0            |
| Nicaragua          | 3               | 7                  | 0            | 0             | 12           | 0             | 0            |
| Panama             | 6               | 1                  | 0            | 0             | 0            | 0             | 0            |
| Paraguay           | 4               | 0                  | 0            | 0             | 0            | 0             | 0            |
| Peru               | 5               | 1                  | 0            | 16            | 0            | 0             | 0            |
| Uruguay            | 1               | 0                  | 0            | 0             | 0            | 0             | 0            |
| Venezuela          | 4               | 0                  | 0            | 1             | 0            | 0             | 0            |

Source: Authors' estimates using the Integrated Network for Societal Conflict Research data base.

Since 1951, Latin America has experienced 97 successful or unsuccessful coups d'état, 21 episodes of international political violence, 134 episodes of civil political violence and 35 episodes of ethnic violence. The table shows that Costa Rica and Uruguay are remarkably different from the rest of the countries in Latin America in terms of episodes of political violence and coups d'état. However, this table does not take into account dictatorships or years under autocratic governments. Once this is considered, Costa Rica is an exceptional country, where the only episode of political violence in the country was the attempted overthrow of Figueres' government in 1955. But even this episode lasted less than a month and was solved via diplomatic channels rather than warfare.

In summary, history and our estimates render two mechanisms that explain our results. First, the abolishment of the army was of paramount importance for the establishing of the required political stability and consolidated democracy for the effective implementation of the new institutional reforms of the new constitution. These institutional changes came along with a more active role of the government in the economy, which in the long run devoted more resources to education, health and infrastructure. And secondly, not having an army ensured that Costa Rica could not undertake many of the various costs associated with having one. Namely, the destruction of institutions and physical capital, political instability and the ever-present opportunity cost of devoting resources to armed forces.

## 7 Conclusions

This article presents evidence of the positive developmental effects of the abolition of Costa Rica's army through synthetic control methods. We find these effects to be robust, and exclusive to the country. Our synthetic control estimates show that Costa Rica's annual average per capita GDP growth increased an additional percentage point in the 1951-2010 period relative to a synthetic control Costa Rica that did not abolish its army. Thus implying that Costa Rica doubled its per capita GDP every 30 years rather than every 53.

Prior to the abolishment of its army, Costa Rica was the country with the fourth lowest GDP per capita growth in Latin America; following the abolishment of the army, the country becomes the second best country in this indicator. While the country's GDP per capita grew at an average annual rate of 1.31% from 1920 to 1949, this rate increased to 2.28% in the 1950-2010 period. This change makes Costa Rica the country with the second largest positive increase in this indicator in all Latin America.

We additionally point out how the gap between Costa Rica's GDP and its counterfactual is indeed explained by a phenomenon that started after the end of the civil war in 1948. After this civil war, a new process of democratization began with a new Constitution that expanded the economic functions of the State, reinforced the social reforms of the early 1940s, created new institutions that added checks and balances which reduced the imbalance of power held by executive power present in the previous Constitution of 1871. However, despite these reforms, there was no consolidated democracy, confidence in the electoral process or pacts between elites that granted economic and political stability.

This work provides evidence that committing to democracy and peace does pay off in the long run. It also shows that even after a civil war that divided a country, a society can move on and become more prosperous. Or as Ernest Hemingway once wrote: "*War is not won by victory.*" (Hemingway, 1929).

## 8 References

Abadie, A., Diamond, A., & Hainmueller, J. (2015). Comparative politics and the synthetic control method. *American Journal of Political Science*, 59(2), 495-510.

Abadie, A., Diamond, A., and J. Hainmueller. (2010). Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program. *Journal of the American Statistical Association* 105(490): 493-505.

Abadie, A. and Gardeazabal, J. (2003). Economic Costs of Conflict: A Case Study of the Basque Country. *American Economic Review* 93(1): 113-132.

Abadie, A., Diamond, A., & Hainmueller, J. (2011). Synth: An r package for synthetic control methods in comparative case studies.

Alptekin, A., & Levine, P. (2012). Military expenditure and economic growth: A meta-analysis. *European Journal of Political Economy*, 28(4), 636-650.

Bethell, L., & Roxborough, I. (Eds.). (1997). *Latin America Between the Second World War and the Cold War: Crisis and Containment, 1944-1948*. Cambridge University Press.

Bilmes, L., & Stiglitz, J. (2006). The economic costs of the Iraq war: An appraisal three years after the beginning of the conflict (No. w12054). *National Bureau of Economic Research*.

Bowman, K. (2000). ¿Fue el compromiso y consenso de las elites lo que llevo a la consolidación democrática en Costa Rica? Evidencias de la década de 1950. *Revista de Historia*, 0(41).

Bowman, K. (2002). *Militarization, democracy, and development: The perils of praetorianism in Latin America*. Penn State Press.

Collier, P. (2011). *Wars, guns and votes: Democracy in dangerous places*. Random House.

Collier, P. (2006). War and military spending in developing countries and their consequences for development. *The Economics of Peace and Security Journal*, 1(1). doi:<http://dx.doi.org/10.15355/epsj.1.1.10>

Dabène, O. (2014). *Costa Rica: juicio a la democracia*. Centro de estudios mex-

*icanos y centroamericanos*. Facultad Latinoamericana de Ciencias Sociales. San José, Costa Rica.

Díaz, D. (2015). *Crisis social y memorias en lucha: guerra civil en Costa Rica, 1940-1948*. Editorial Universidad de Costa Rica.

Gates, S., Hegre, H., Nygård, H. M., & Strand, H. (2012). Development consequences of armed conflict. *World Development*, 40(9), 1713-1722.

Hemingway, E (1929). *A farewell to arms*. HarperCollins Publishers Ltd.

Lee, Jong-Wha & Hanol Lee (2016). Human Capital in the Long Run. *Journal of Development Economics*, vol. 122, pp. 147-169.

Lehoucq, F. E., & Molina, I. (2002). *Stuffing the ballot box: fraud, electoral reform, and democratization in Costa Rica*. Cambridge University Press.

Knight, M., Loayza, N., & Villanueva, D. (1996). The peace dividend: military spending cuts and economic growth. *IMF Staff papers*, 43(1), 1-37.

Kollias, C., & Paleologou, S. M. (2017). Military spending, economic growth and investment: a disaggregated analysis by income group. *Empirical Economics*, 1-24.

Molina, I. (2016). *Anticomunismo reformista, Competencia electoral y cuestión social en Costa Rica (1931-1948)*. San José: Editorial Costa Rica.

Molina, I., & Palmer, S. (2017). *Historia de Costa Rica: breve, actualizada y con ilustraciones*. Editorial Universidad de Costa Rica.

Muñoz, M. (1990). *El estado y la abolición del ejército, 1914-1949*. Editorial Porvenir. San José, Costa Rica.

Muñoz, M. (1990). Mitos y realidades de una democracia desarmada. *Polémica*, (10), 35-49.

Murdoch, J. C., & Sandler, T. (2002). Economic growth, civil wars, and spatial spillovers. *Journal of conflict resolution*, 46(1), 91-110.

Murdoch, J. C., & Sandler, T. (2004). Civil wars and economic growth: Spatial dispersion. *American Journal of Political Science*, 48(1), 138-151.

Nafziger, E. W., & Auvinen, J. (2002). Economic development, inequality, war, and state violence. *World development*, 30(2), 153-163.

Obregón, R. (1981). *Hechos militares y políticos*. Museo Histórico Cultural Juan Santamaría. Alajuela, Costa Rica.

Oficina de Planificación Económica. (1982). *Evolución socioeconómica de Costa Rica, 1950-1980*. Editorial Universidad Estatal a Distancia.

Organization of American States. *Inter-American Treaty of Reciprocal Assistance (Rio Treaty)*. February 9, 1947.

Salazar, J. (1995). *Crisis liberal y estado reformista: análisis político-electoral (1914-1949)*. Editorial Universidad de Costa Rica.

Schifter, J. (1986). *Las alianzas conflictivas*. San José, Costa Rica. Libro Libre.

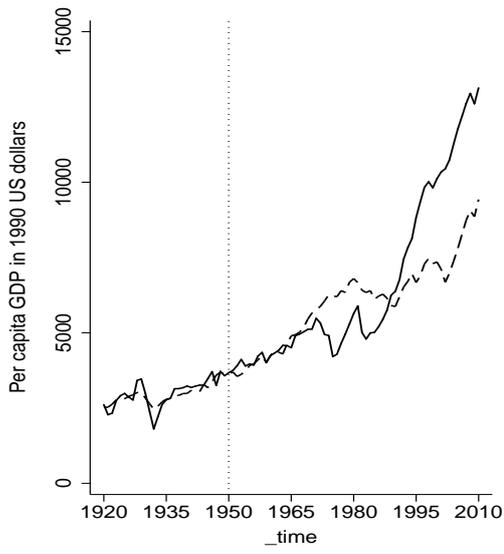
Rovira, J. (2000). *Estado y política económica en Costa Rica, 1948-1970*. San José: Editorial Universidad de Costa Rica.

Solís, M. (2008). *La institucionalidad ajena: Los años cuarenta y el fin de siglo*. Editorial UCR. San José, Costa Rica.

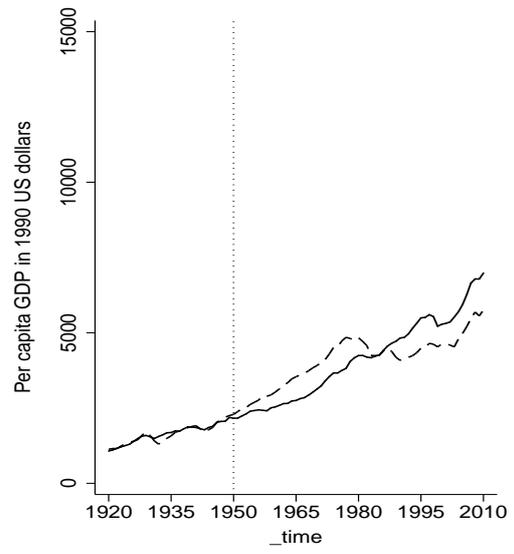
Volio Jimenez, F. (1985). *El Militarismo en Costa Rica y Otros Ensayos*. Libro Libre. San Jose, Costa Rica.

Yakovlev, P. (2007). Arms trade, military spending, and economic growth. *Defence and peace economics*, 18(4), 317-338.

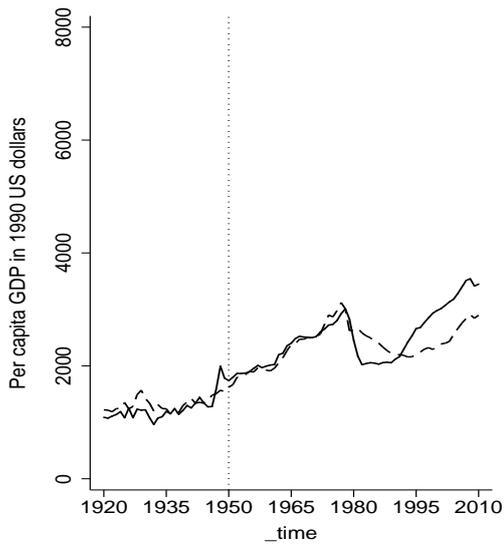
# Annex



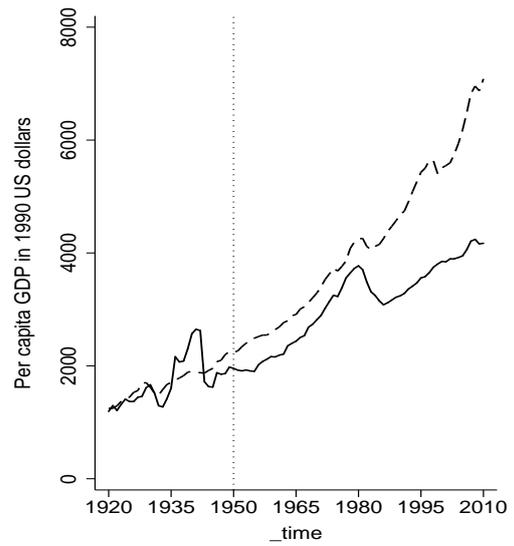
— Chile  
- - - synthetic Chile



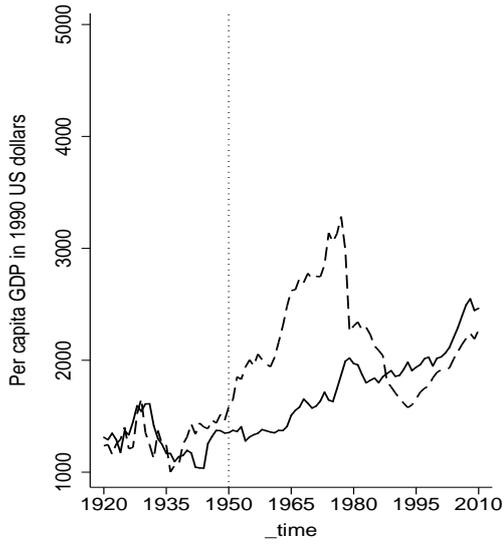
— Colombia  
- - - synthetic Colombia



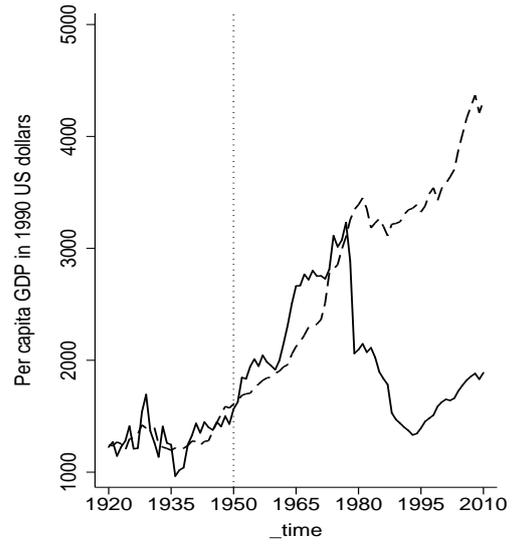
— El Salvador  
- - - synthetic El Salvador



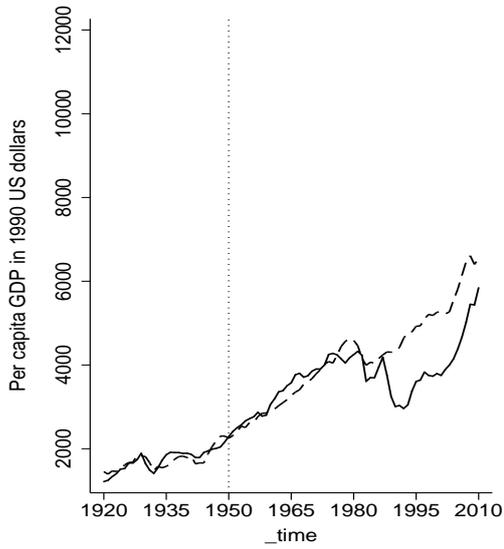
— Guatemala  
- - - synthetic Guatemala



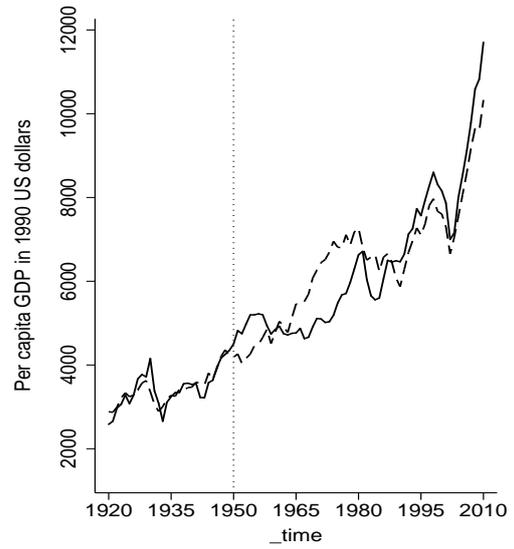
— Honduras  
 - - - synthetic Honduras



— Nicaragua  
 - - - synthetic Nicaragua



— Peru  
 - - - synthetic Peru



— Uruguay  
 - - - synthetic Uruguay