The Economic & Social Consequences of Left-Populist Regimes in Latin America: Bolivia, Ecuador, Nicaragua, & Venezuela

Sam Absher
Department of Economics
University of Oklahoma
Norman, OK 73019

Kevin Grier
Gordon Tullock Professor of Political Economy and
Professor of Political Science
Texas Tech University
Lubbock, TX 79409

Robin Grier
Professor of Economics
FMI, Texas Tech University
Lubbock, TX 79409

I. Introduction

Latin American politics has long contained a Populist, Anti-Capitalist, perhaps we could call it Socialist strain. On the politically successful side of the ledger, the Cuban revolution in 1958 led the way, followed by the Sandinistas taking power in Nicaragua in 1979. More recently, at least partly similar governments have taken power via the ballot box in Venezuela (1999), Bolivia (2006) and Ecuador (2007). Despite their obvious dis-similarities, these regimes all followed a common playbook of strengthening the executive branch, weakening the other branches, reducing checks and balances, and attempting to remain in power indefinitely. These 5 countries are the core members of ALBA (Alianza Bolivariana para los Pueblos de Nuestra América), the group founded by Venezuela and Cuba, which endorsed a decidedly non-capitalist economic development path as well as forming a trade group as an alternative to the USA's Free Trade in the Americas.

Evaluations of these regimes are often slanted in the direction of the politics of the evaluator, with left leaners praising, and right leaners condemning, exactly the same set of outcomes. The problem for rigorous evaluation is creating an appropriate counterfactual. In this paper, we evaluate the economic and social consequences of these populist, anti-capitalist regimes in Nicaragua, Venezuela, Bolivia, and Ecuador, using the Synthetic Control Method. We do not study Cuba due to a lack of comparable data to the other 4 cases. While we are far from the first to grade the performance of these leaders and countries, we are the first to compare their performances to a systematically constructed counterfactual and examine their performances in per-capita income, infant mortality, and income inequality based on our best estimates of what would have happened in those countries without the dramatic policy changes ushered in by these leaders.

We find the average effect of this regime type on per-capita income to be large, negative, significant, and persistent. The average income loss is over $2,000 per person compared to what our "business as usual" counterfactual predicts. This is a huge number indicating that these countries are over 25% poorer than what they would have been without these regimes coming to power.

When we study infant mortality and inequality, we find no significant average effects of these regimes on either. In other words, we find no evidence of a trade off, where lower average incomes were perhaps offset by better social outcomes, at least in these two cases that we examine.

When we consider each country separately, we find that the effects these regimes had / have are heterogeneous. With only 4 cases, it is challenging to explain the heterogeneity of the results, but it seems to us that nationalization / expropriation and a poor business climate hurt GDP more than the political upheavals in these countries.

Our research draws most obviously on the work of Abadie & Gardeazabal (2003), and Abadie, Diamond, & Heinmuller (2010, 2015), who created and developed the Synthetic Control Method. We also use a modified version of the method developed by Cavallo et. al (2013) to calculate average effects and period by period p-values for those effects. The paper directly closest to ours was co-authored by one of us and studies the case of Hugo Chavez and Venezuela (Grier & Maynard, 2016).[1] Here we expand and generalize that work.

[1] In the present paper we will use a different dataset and a slightly different set of donor countries than Grier & Maynard and will report how our results match up to theirs when we show country specific results in the second half of the paper. To preview, we find even larger negative effects on GDP per capita than they did, but our effects are less precisely estimated than theirs. We chose different data in part as a robustness check, but mainly for the practicality that the World Bank has stopped reporting GDP data pre-1990 and so we take our

In what follows below, we present our empirical strategy for generating counterfactuals and assessing significance. Then we discuss our data choices and sources, followed by the presentation of our aggregate results. In the second half of the paper, we discuss the politics and policies of each of these regimes in some detail, and then present individual country results. We conclude with a discussion of the implications of our research and some ideas for future work.

II. Method, Inference, and Data

A: Method

Our goal is to estimate the average effect of these populist, anti-capitalist regimes on GDP, Infant Mortality, and Inequality. As noted above, evaluating the impact of these leaders and their policies requires the researcher to estimate what would have happened in these countries in the absence of the populist's leadership and policy change. While randomization is the "gold standard" for causal inference, we will never get a good RCT on political systems in the foreseeable future. We are thus left with our toolkit of quasi-experimental methods, of which, given the long pre-treatment period we have and the few cases we have, synthetic control seems clearly the best choice.

As developed and expounded in Abadie & Gardeazabal (2003), and Abadie, Diamond, & Heinmuller (2010, 2015), Synthetic Control is a data driven method to produce credible counterfactuals in case studies. The researcher specifies a group of potential donor units that can be used to construct the control along with a set of indicator variables the researcher thinks are important in the determination of the outcome being studied. The

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macro data from the latest version of the Penn World Tables. This switch to the PWT also allowed us to use more oil exporting countries than Grier & Maynard did in their donor pool.

control will be a weighted average of the donor units. The weights are chosen to both minimize the deviations of the control and the treated unit in the pre-treatment period and to balance the control and the treated unit on the indicator variables. Indicator variables that are more important for predicting the outcome receive more weight in the algorithm.[2]

Abadie, Diamond & Hainmueller (2015) emphasize several points in creating the control:

> To avoid interpolation biases, it is important to restrict the donor pool to units with characteristics similar to the treated unit. Another reason to restrict the size of the donor pool and consider only units similar to the treated unit is to avoid overfitting.
>
> In addition, the applicability of the method requires a sizable number of preintervention periods. The reason is that the credibility of a synthetic control depends upon how well it tracks the treated unit's characteristics and outcomes over an extended period of time prior to the treatment. We do not recommend using this method when the pretreatment fit is poor or the number of pretreatment periods is small.

In the light of this advice, we choose a focused, 24 country, donor pool described in the data section below, and make sure to have a decently long (from 20 to 26 years depending on the case) pre-treatment period.

To estimate the average treatment effect in the four cases we study, we use a modified version of the multiple treatment effect model developed by Cavallo et al. (2013). The method works by estimating individual effects for each unit by synthetic control and then averaging the actual outcomes and the synthetic predictions. The difference between those two averages is the average treatment effect. We differ from Cavallo et al. in that instead of using a single common set of indicator variables for all the treated units, we customize the models for each country, choosing the variables that produce the best pre-sample fit.

[2] For further details on the mechanics of this process see the articles cited above or Grier & Maynard (2016).

B. Inference

Beyond reporting the size of the treatment effect, we also want to give some information about its statistical significance. Here, we also follow Cavallo et al.'s use of permutation tests for each period of the treatment interval. For a single country, we take each period's treatment effect (the deviation from the observed value and the synthetic's predicted value), find its absolute value, and rank that effect among the absolute values of the period's placebo effects. The p-value is merely the number of placebos with a larger estimated effect divided by the total number of placebos. This process, again, is repeated for each post-treatment period, allowing the researcher to observe how the effect and statistical significance evolves over time. Note that countries (either treated or donor) that have poor fit in the pre-treatment period are more likely to witness larger deviations in any post-treatment period. To address this concern, each effect is divided by the pre-treatment RMSPE.

Determining the statistical significance of our average treatment results across multiple regimes in the synthetic control framework requires certain alterations to the inferential methodology used in the single event analysis. As noted above, to measure the average effect of g multiple treatments, we simply average the treatment effect across all g treated observations. We call the result $\bar{\alpha}$. However, when determining the statistical significance of such an average, we must take into account that such an average will smooth out noise in the estimate. It is no longer appropriate to estimate the p-value using a pool of single event placebos, as done in the single-event analysis. When constructing the distribution to which we compare the average treatment effect, we must use averages as well. We create this distribution by finding all possible averages of placebo effects, $\bar{\alpha}^{PL}$,

where each event contributes one placebo effect in calculating a placebo average. In the case of our income analysis, we include 4 countries (Venezuela, Nicaragua, Ecuador, and Bolivia). One placebo average might be composed of Canada (from, say Venezuela's analysis), Iran (from Nicaragua's), Panama (from Ecuador's), and, finally, Canada again (but this time from Bolivia's analysis). Since Bolivia and Venezuela's events occur at different times, even when using the same donor country (in our example, Canada) and specification will generate two different placebo estimates. From here, the process is similar to the single-treatment inferential statistics, where the result is effectively ranked among the placebo effects. If the number of donors is □, which is constant across all events, □, then the total number of placebo averages will be equal to □□. So for example, if we have 24 donors and 4 events (which we do for the case of real per-capita GDP), we will be calculating 331,776 placebo averages to compute each p-value.

C. Data

Since these four countries are Latin American, and three are energy exporters, we take as our donor pool other countries in the Americas and other important energy exporters. We have a total of 24 potential donor countries as shown in Table 1.[3] As noted above, we are studying 3 outcome variables. Real Per Capita GDP, which comes from the Penn World Tables, Infant Mortality, from the World Bank, and national GINI coefficients which are taken from the SWIID.[4] Our potential indicator variables are mainly from the Penn World Tables. They consist of the Human Capital Index, Capital Stock per Capita, Merchandise Exports as a share of GDP, Investment as a share of GDP, Government

[3] Not all countries are available for all outcomes. For example, we do not have sufficient Gini data for Algeria, El Salvador, Honduras, Iraq, Kuwait, Paraguay, Saudi Arabia or United Arab Emirates to use them as potential donors when studying inequality.

[4] In the case of the Gini data, we also do some interpolation to fill in missing values.

Consumption as a share of GDP, and Labor Compensation as a share of GDP. We also consider using the Polity2 score from the Polity Project as an additional indicator variable. Table 2 gives summary statistics and brief descriptions of each of these variables.

As noted above, we actually employ a different subset of these variables (and their lags) for each country and each outcome variable, looking for a synthetic control that closely matches the outcome under study pre-treatment and whose values on the chosen indicator variables also match up with those for the country under study as well. We discuss the exact specifications for each country and outcome in the second half of the paper, but we begin by presenting and discussing average treatment effects.

D. What is the treatment we study?

Before showing our results, we should be clear on exactly what is the treatment that we are studying. After all, heads of state change frequently in many countries. Why are we picking these 4 cases? The treatment we are studying here is that of a political outsider coming to power, who significantly changes the political institutions of the country to concentrate power in the executive branch, works to stay in power indefinitely, and is fairly unsympathetic to allocating resources via markets.[5] Table 3 shows a breakdown of these components across the 4 regimes we study. Obviously, not every component is equally implemented in all 4 cases. For that reason we present regime-specific results in section IV. However, we believe there is enough commonality across these cases to make estimating an average treatment effect relevant and informative, which is what we proceed to do in the next section.

[5] We want to emphasize that we are not romanticizing the governance of these countries before the regimes we study come to power. Anastasio Somoza was not providing good governance in Nicaragua. The existing party structures in Bolivia, Ecuador and Venezuela were not inclusive, to say the least.

III. Average treatment effect results.

To calculate these average effects, we line up each country with the others on the year the regime under study took power in each. For example, the first treatment year in Nicaragua is 1979, in Venezuela it is 1999, in Bolivia, 2006 and in Ecuador, 2007. The GDP values for each of those years are averaged together and plotted as the point labeled 1 on the horizontal axis of Figure 1, with the rest of the years filled out in the same manner. We do exactly the same thing with the synthetic control for each country and plot their average on the same graph. On the right hand side of the vertical line, the difference between the two plots gives the average treatment effect.

From Figure 1, we can see that the average synthetic for real per-capita GDP closely tracks the average outcome in the pretreatment years. We can also see that the average treatment effect is immediate, large, negative, and persistent. At the end of our experiment, there is roughly a $2000 shortfall of average real GDP per capita relative to the prediction of the averaged synthetic. Comparing this to the final value of average GDP ($8000) shows that the average effect of the populist, anti-capitalist regimes we study was to reduce real per-capita GDP by roughly 25%, which is a very large effect.

Figure 2 presents the period-by-period p-values for the average effects shown in Figure 1. The height of the bars gives the size of the treatment effect and the associated p-value is written at the end of each bar. Except for the 4th treatment period, each year's effect is significant at the 0.05 level or better and the 4th period is significant at the 0.10 level. In sum, we find very strong evidence of a large GDP penalty from these regimes.

Of course, the rhetoric of these regimes was rarely about economic growth. They tended to stress, health, poverty, and inequality. There is a real dearth of internationally

comparable poverty data, but we are able to study health and inequality. We take Infant Mortality as our health measure and the GINI coefficient as our inequality measure, and perform exactly the same analysis for these outcomes that we did for real per-capita GDP.

Figure 3 shows the average results for Infant Mortality. The average of this outcome variable is monotonically declining during the treatment period, a fact that is often used to praise these regimes. However, it was also monotonically declining before the treatment period, and its fall is matched very closely by the averaged synthetic control both before and after the treatment begins. Figure 4 presents the p-values for the average treatment effect each period and shows that the average effect is both relatively small and completely insignificant. The implication of these results is that there is no improvement in infant mortality that can be causally attributed to the advent of the populist, anti-capitalist regimes we are studying.

Figure 5 presents the average results for Inequality. Because we cannot amass enough data on inequality in the 1960s, this result is computed for Venezuela, Bolivia and Ecuador only. Just as in the case of infant mortality, the average GINI falls during the treatment period. However, as before, it also falls (though less monotonically) during the pre-treatment period and the average synthetic control predicts the average GINI fairly well both before and after the treatment. Figure 6 presents size of the treatment effect and its p-value for each period. The largest reduction in inequality relative to the control is in the 3rd treatment period and is about 1.25 points, which is small relative to the average GINI value of around 35 for that period. All the effects are completely insignificant. In sum, we find no decline in inequality that can be causally attributed to the 4 populist, anti-capitalist regimes we study.

Overall, these average results paint a grim picture. These regimes cost their polities 25% or more of their national income with no significant improvements in health or equality to show for it. The regimes that preceded these four were certainly not paragons of governance; indeed their poor performance left the ground open for the regimes we study. However promising the rhetoric or intentions, the performance of the new regimes was either significantly worse, or at best no better, than their predecessors.

In the rest of the paper, we discuss the policies of each regime in more detail and present individual country results. We find some heterogeneity in the results, and it seems to imply that economic disruption is more detrimental to growth than is political disruption.

IV. Individual Country Results

In this half of this paper, we go country-by-country, describing the political and economic changes introduced by the each of the four new regimes and presenting single country treatment effect results. We document some heterogeneity in the outcomes across countries and look for corresponding variation in policies that might help to explain the heterogeneous outcomes. We do this chronologically starting with Nicaragua.

A. Nicaragua

In 1979, the Sandinistas headed by Daniel Ortega forced the incumbent president/dictator Anastasio Somoza to resign and flee the country. The new ruling junta immediately abolished the existing constitution, the office of the president, the legislature, and the national courts and began to rule by decree. The entire existing political structure

was jettisoned all at once. The junta also immediately nationalized the banking system and over 20% of the arable land in the country (which had been held by the Somoza family or its "supporters"). Nationalizations also occurred in the insurance, mining, and transportation sectors. Elections were held in 1984, when Ortega became president, but a new constitution was not approved until 1987. Ortega lost the 1990 election and also lost in 1996 and 2001 before winning in 2006. He is currently president of Nicaragua again today.

Because the Sandinistas came to power in 1979, we worked to push our data back to 1960 for a reasonably sized pre-treatment period. Thus we have 19 years of pre-treatment data and 12 years of treatment. Figure 7 shows the time path of real per capita GDP in Nicaragua along with the time path predicted by our synthetic control. We used 6 lags of GDP along with the average level of human capital and the average level of investment as our indicator variables. The algorithm chose a control of 61% Honduras, 21% Mexico, 13% USA and 5% Chile, shown in table 4.[6] The pretreatment fit is good with a RMPSE of $127 dollars on a 1978 income level of almost $8000. Table 5 compares the pre-treatment values of the indicator variables between Nicaragua and the synthetic control, revealing no significant dissimilarities. Figure 7 shows an immediate, large, and persistent drop in Nicaraguan income compared to the control. Ortega's rule corresponds to a cratering of the national economy. Figure 8 graphs the year-by-year treatment effects and reports their p-values. The statistical significance is highest in the first two and the last two years of the period.

[6] Dropping the USA from Nicaragua's donor pool does not change our results here in any material way.

We next turn to infant mortality. Figure 9 presents the data for infant deaths per 1000 live births in Nicaragua as well as the values predicted by the synthetic control. To create the control we use 4 lags of infant mortality, the average value of human capital and the average value of investment. Table 6 lists the values of Nicaragua's and the synthetic control's indicator variables. The control fits the actual data very well in the pre-treatment period, and the immediate post-treatment years but then diverges in the later part of the treatment period with Nicaragua underperforming the control. Figure 10 shows the estimated treatment effects and their associated p-values. By the end of the first Ortega era, infant mortality was over 15% higher that what is predicted by the control and that effect is consistently significant at the 0.06 level.

As noted earlier, we cannot amass enough inequality data from the 1960s to estimate the effect Ortega and the Sandinistas had on that outcome, so we conclude our look at Nicaragua by noting that both income and infant mortality underperformed during this period. The effect on income is huge but only marginally significant, while the effect on infant mortality is smaller but more precisely estimated.

B. Venezuela

Hugo Chávez, president from 1999 until his death in 2013, was a hugely polarizing figure in Venezuelan politics. He came to power on a left-leaning platform of ending poverty and inequality, combatting US imperialism, and revolutionizing elite-driven politics in his country. He was a true political outsider. He had helped engineer a failed

military coup in 1992 and was jailed for two years afterwards and was not associated with either of the two established political parties in Venezuela.[7]

In his initial campaign for president, Chavez called for a constitutional convention and the abolishment of the existing legislature. The Supreme Court ruled this unconstitutional and argued that any institutional changes must wait until after the convention. Chavez may have lost that battle but he won the war. He responded by greatly expanding the Court and packing it with party supporters.[8] The constitution transformed the bicameral structure of the legislature into a unicameral one, increased the presidential term from 5 years to 6, and allowed for presidential re-election. In 2000, Chavez's party won such a commanding advantage in the legislature (101 of a total of 165 seats), that the latter ended up granting him the power to rule by decree. Chavez would go on to change the constitution again in 2009 to allow for a fourth consecutive presidential term.

Business uncertainty rose during Chávez's tenure, as he nationalized large industries (like energy, iron, steel, cement, and mining), food production (rice, grocery chains, farms, and food distribution), as well as services (including banking, telecommunications, and hotels). The International Country Risk Guide (ICRG) dataset calculates a variable it calls "investment profile," which is determined in part by the risk of expropriation. In the Venezuelan case, the investment profile from an average of 5.84 in the pre-Chávez period to an average of 3.77 during his time as president, a fall of 35%.[9]

[7] He created his own political movement, calling his party the Fifth Republic Movement (MVR – Movimiento Quinta República).
[8] Rohter (1999) and Nelson (2009).
[9] The ICRG data does not extend far enough back in time to show the effect the Sandinistas had on the investment climate in Nicaragua.

We now turn to the country specific results for Venezuela, starting with real GDP per capita. Our predictor variables are three lags of the human capital index, average physical capital per capita, average government consumption and average exports, all from the Penn World Tables. Our control is composed of 17% El Salvador, 44% Nigeria, 21% Norway, 15% Peru, and 2% Saudi Arabia. Table 7 lists the weights for all synthetic Venezuela outcomes. Table 8 shows that the values for the predictor variables for this synthetic match up extremely well to the values for actual Venezuela. Figure 11 shows that the control matches pre-treatment Venezuela reasonably well (the RMSE is $937) and that during the treatment period, Venezuela notably underperforms relative to the control. At the end of our data, Venezuela is about 30% poorer than what it should have been according to the control. Figure 12 shows the annual deviations during the treatment period along with their p-values. The effects are most significant at the beginning and end of the period.[10]

Let us now consider infant mortality. Our predictor variables are three lags of the outcome variable along with average investment share of GDP, average share of government consumption in GDP and the average value of the human capital index. The values of these variables in both actual and synthetic Venezuela are reported in Table 9. The table also shows how much better the synthetic control fits pre-Chavez Venezuela than does the OPEC average, the Latin American average or the values for Panama which would be the single best predictor country to use. The control is in this case is composed of 18%

[10] It is worthwhile to compare these results to those in Grier & Maynard (2016), which used an older version of the Penn World Tables database. Their conclusion is the same as ours. Venezuela is almost one-third poorer than what the control indicates. However, Grier & Maynard were able to produce a better fitting control in the pre-treatment period and to achieve greater statistical significance. The countries chosen for the control also vary in the two studies (our algorithm selects Norway instead of Canada and Nigeria instead of Iran). If we adopt Grier & Maynard's specification using our data, we get a worse pre-treatment fit than what we have reported above, but roughly the same estimated underperformance in the treatment period.

Kuwait, 12% Norway, 40% Panama and 30% Paraguay. Figure 13 shows that the control tracks Venezuelan infant mortality almost perfectly from 1975-1999 and during the Chavez treatment period, Venezuela slightly outperforms its control. Figure 14 shows that from 2000 to 2009 these small improvements are often statistically significant. From 2010 onward the results are completely insignificant. We thus see a significant, but temporary improvement in infant mortality that can be attributed to the Chavez regime.

Finally we report our results on income inequality. Our predictor variables are four lags of Gini, labor compensation share, gross capital formation, and, finally, three lags of income. Table 10 displays the predictor variables and their respective values, between not only Venezuela and Synthetic Venezuela, but across a number of less-rigorous comparison groups. Figure 15 graphs Venezuela's Gini along with the Gini predicted by our control. We can see that starting in 2006, Venezuela starts to outperform the control with a lower Gini. However, Figure 16 shows that these differences are not statistically significant. The Chavez regime did not significantly lower inequality below the predictions of the ""business as usual" synthetic control.

To summarize our results for Venezuela, the Chavez regime is associated with a large and significant decline in real GDP, a small but significant improvement in infant mortality that lasted seven years, and it had no significant effect on infant mortality

C. Bolivia

Evo Morales, president of Bolivia since 2006, was also a political outsider. He was the first indigenous President of Bolivia, a somewhat amazing fact given the large proportion of the country with indigenous roots. Before becoming president, he had been a

coca grower and head of the cocalero trade union. This was not the traditional pathway to presidency in Bolivia. The policies he promised were also a break from the past. Kennemore and Weeks (2011) write that Morales campaigned "primarily against foreign interests by promising to end the US-backed war on drugs, and to nationalize Bolivia's oil and gas sectors."

Like Chávez, Morales called for constitutional change, an act that would "signify a crucial step toward the broader movement of 21st century socialism."[11] It was a difficult process that lasted years but eventually he was successful and a new constitution was passed in 2009 (the country's 17th since independence).[12] The constitution allowed the president to be re-elected to consecutive terms, but Morales argued that his first term did not count since the new constitution in 2009 made Bolivia a "plurinational state instead of a republic."[13] The constitutional tribunal agreed and granted him the ability to run for office for a third time. A 2016 referendum on the issue of him running for a fourth term narrowly lost but Morales is not giving up.[14]

Morales has not changed the structure of the legislature or ruled by decree, although he has threatened to do the latter if legislators did not start cooperating with his agenda. A 2009 Wikileaks cable documents how Morales addressed a conference of his MAS party: "Morales then warned congress of the results if implementing legislation is not passed: 'If some congressmen oppose and do not approve the laws, which are based on the people's

[11] Kennemore and Weeks, 2011, p.270.
[12] Also like Chávez, he has questioned his inability to run for a fourth term, despite what his constitution states. He called for a referendum on the issue in 2016 and lost. Nevertheless, his party is still nominating him for the 2019 presidential elections, stating that they will find a way to make it legal. *The Guardian*, 2016.
[13] The *Guardian*, December 17th, 2016.
[14] Voters rejected the referendum but that has not stopped Morales from trying for a fourth presidential term.

vote, I will implement the constitution through decrees.'"[15] He also has little respect for the judiciary or for the concept of separation of powers.[16] In 2011, Morales decided that the judgeships for the top four courts of the country would no longer be chosen by Congress but rather by the voters themselves. The opposition protested, noting that candidates were chosen by a "congressional assembly committee, which raises questions over their potential neutrality."[17]

Morales's recent comments show that he is not a fan of the separation of powers. He said that the 'notion of having separation of powers in government' is at the service of the American empire' because it generates 'judicial coups' to anti-capitalist presidents such as himself." He went on to "suggest that the judicial branch of government for the country should not be independent."[18]

When we look at the ICRG investment profile, we can see that the Morales administration was not "business friendly". The index falls from 8.67 in the 10 years before Morales to 3.45 afterwards, a 60% decrease. The precipitous fall is not overly surprising as Morales followed through on his campaign promise to nationalize the oil and gas industry. He went beyond that and nationalized telecommunications and mining, as well as placing price controls on a variety of products including food and gas. The *Economist* notes that

[15] Wikileaks, January 13th, 2009. The cable goes on to note that "this is not the first time Morales has declared that he will circumvent the congress by use of decrees. In August 2007, Morales announced at a public meeting with Venezuelan President Hugo Chavez that 'being subjected to the law is damaging us (the Morales government); though they may say our decrees are unconstitutional, that does not matter.'

[16] The *Economist*, 2007, argues that "Mr. Morales also has Mr. Chávez's penchant for subverting rival centres of power, but perhaps less talent for it. Take the latest clash with the judiciary. This began when the Constitutional Tribunal ruled that four Supreme-Court justices temporarily appointed by the president should yield their seats. Mr. Morales called for the tribunal's impeachment."

[17] Hayes, *The Guardian*, 2011.

[18] *Panam Post*, 2017.

"food producers were forced to sell in the local market rather than export…[and that]…a new state-owned body distributes food at subsidized prices."[19] Kennemore and Weeks (2011) argue that the Bolivian government has been rather pragmatic about the nationalizations, renegotiating how much foreign firms must pay to the government. The issue, they argue, is that the government's regulatory policies are causing chaos: "internal polarization and unpredictable regulation have damaged its investment climate."[20]

We have data for Bolivia from 1970 – 2014, giving us a 36 year pre-treatment period and a 9 year treatment period. For our indicator variables, we have chosen four lags of the outcome variable, three lags of the human capital index, average physical capital per capita, average government consumption and average exports all from the Penn World Tables. Table 11 lists the synthetic control's weights selected for each analysis. Table 12 shows that our synthetic Bolivia matches actual Bolivia pretty well on these indicators.

Figure 17 displays our estimate of the treatment effect of Morales on Bolivia's real per-capita GDP. As can be seen, the deviation of Bolivia from its synthetic control is large, negative and persistent. This is a stark contrast to how well the control matched Bolivian performance during the 36-year pre-treatment period where the RMSE was only $100. In this experiment, as shown in Table 4, the control consists of 43% El Salvador, 36% Indonesia, 9% Nigeria, 1% Paraguay, and 12% Peru.

[19] *Economist* (2009). A subsequent article in the *Economist* (2011a) notes that inflation had been creeping up to over 8% that January. Besides forces outside of the government's control, the article argues that the government has exacerbated the situation: "As prices rose in 2008 the government intervened to curb farm exports and imposed price controls. The result was that farmers planted less. Huge queues have formed at state food-distribution centres. Some of those centres closed when they ran out of supplies or their staff feared violence."

[20] They go on to note that "annual FDI averaged US$452 million between 1990 and 2000, but by 2007 was US$204 million" (p. 271).

By the end of the period under study, Bolivian per-capita income is almost $2500 lower than what is predicted by the control. In other words, in 2014 Bolivia is almost 40% poorer than what the control, (which predicted very accurately for 36 years pre-Morales) says it should be! Figure 18 graphs the deviations of Bolivian per-capita GDP from the control by year and provides a p-value for each period. As can be seen, for the final 8 of the 9 years, the deviation is significant at the 0.01 level. While Bolivian income did rise under Morales, it rose nowhere near as much as the control predicts. As we will see, this is the single biggest effect we find anywhere in our study. It also underscores the importance of a valid counterfactual. While Bolivia grows the fastest during its treatment period of the four countries we study, it is actually the worst performer relative to its counterfactual potential.

We now turn to infant mortality, where data availability issues lead us to begin in 1975, giving 31 years pre-treatment and 9 years of treatment. In this case our indicator variables are 5 lags of the outcome variable, average investment share, average share of government consumption and the average value of the human capital index. Table 13 shows that the synthetic Bolivia does a good job of matching the values of these variables in actual Bolivia and that the control tracks Bolivia well pre-treatment with a RMSE of around 6 (deaths per 1000 live births). Figure 19 displays the time series of actual infant mortality in Bolivia and the predictions from our control, which is composed of 35% Nigeria and 65% Peru.

While infant mortality fell under Morales, the graph clearly shows that infant mortality had been steadily falling in Bolivia over our entire study period. Bolivia does out-

perform the synthetic control during the treatment period, but as Figure 20 shows, the deviations are not statistically significant.

Our third outcome is income inequality as measured by the Gini coefficient. However, Bolivia's Gini is very volatile over time and we were unable to find a synthetic control that could track Bolivia acceptably over the 1980 – 2005 pre-treatment period. Appendix A presents the best we could do, which is not acceptable. We can say there seems to be no real effect of Morales on inequality, but we have little confidence in this result.

To summarize our results of how the Morales administration affected Bolivia, we find a huge and significant shortfall in real GDP and a completely insignificant reduction in infant mortality. We cannot offer a fair test of the effect on inequality due to our inability to produce an acceptable control.

D. Ecuador

Rafael Correa, president of Ecuador from 2007-2017, had a considerably more technocratic background than the other three presidents we study. He earned his Ph.D. in Economics at the University of Illinois in 2001 and was named Minister of Finance in 2005. He was, however, largely a political unknown when he ran for president in 2006 and had never been affiliated with a political party.[21] He did not run as a candidate for any major party and instead heralded himself "as a macho family man of modest origins who was angry with the country's political elites" (Conaghan and De La Torre, 2008). Correa framed his election as a citizen's revolution that would sweep away corruption and institutions (like the legislature) that garnered little respect amongst the populace.[22] In fact, he argued

[21] De la Torre (2013, p. 35).

[22] Conaghan (2016, p. 111-12) writes that "Traditional checks and balances had long seemed inoperative. Neither Congress, long wracked by corruption, nor the courts, long the targets of

that the country needed a constitutional assembly to sweep away the legislature. For that reason, he boldly decided not to field any candidates from his party in the legislative elections in his first year as president. The gamble worked and Correa succeeded in getting a new constitution passed in 2008.[23]

Like the Venezuelan case, Ecuador's new constitution greatly strengthened the chief executive relative to other branches of government.[24] Conaghan (2016, p. 111-2) notes that the previous constitution of 1998 had already awarded the president strong powers and the 2008 constitution goes way beyond those. For instance, the president could now "call national referenda, partially veto or amend laws passed by the National Assembly, which in such cases can restore the original legislation only by the vote of a two-thirds majority." The constitution also allowed the president to be re-elected and to dissolve the National Assembly and call new elections, a power that Correa has not exercised but rather used as a threat to keep legislators in line.[25] Similar to Chavez, Rafael Correa had campaigned on a promise to "depoliticize the courts" and instead "seized control of them."[26] As De la Torre (p. 35), puts it, "All branches of government are under his (Correa's) control, so there will be no institutional mechanisms for holding him accountable."

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partisan tampering, had much legitimacy. Correa blamed the rule of the traditional parties (*la partidocracia*) for blighted institutions and vowed to sweep them all away."

[23] Correa would also become dissatisfied with his constitution, going so far as to question its constitutionality as it prohibited him from running for a consecutive third term. He argued that the 2008 constitution was a violation of his human rights!

[24] Conaghan (2016, p. 111-2) notes that the previous constitution of 1998 had already awarded the president strong powers and the 2008 constitution goes beyond those.

[25] Conaghan (2016, p. 111-2). Conaghan (2016, p. 110) describes the legislature under Correa's presidency a "rubber stamp." See Conaghan (2016) as well for an interesting description of how Correa has strengthened the executive even more by adding a fifth branch of government in the area of "transparency and social control," which essentially answers to the executive branch.

[26] The Economist (2/18/2017) notes that "a commission led by a former interior minister disciplines and often removes judges." Conaghan (2016, p. 110) agrees, noting "An executive-directed restructuring replaced numerous judges and ended judicial autonomy."

Correa departs from Chavez and Morales in one way though; while he often threatened to nationalize the oil industry, he never actually did. He also never expropriated other industries important to the Ecuadorian economy. When he first took over as President, he spooked financial markets by refusing to pay bonds, calling international bondholders "true monsters." Five years later, he dramatically changed course and re-entered the international bond market.[27] The Economist writes, "Mr. Correa did not strangle growth and spur inflation with price controls, as Hugo Chávez and Nicolás Maduro did in Venezuela."[28] This difference is reflected in Ecuador's investment profile. In the 10 years before Correa, the investment profile index averaged 5.64. During his presidency, it fell to an average of 4.82. While this decrease (15%) is not negligable, it is much smaller than the decreases in Venezuela and Bolivia .[29]

Raphael Correa took office in 2007, giving us a 38-year pre-treatment period and an 8 year treatment period. We begin our analysis with real per-capita GDP. Figure 21 presents the time series of actual real GDP per capita in Ecuador along with our estimated synthetic control. The control is composed of 22% Algeria, 2% Canada, 15% El Salvador, 50% Paraguay, 11% Peru, and 1% Saudi Arabia. Estimated weights for all outcome variables in Ecuador's analysis can be found in Table 14. The predictor variables used in the estimation are four lags of the outcome variable, three lags of the human capital index, average physical capital per capita, average share of government consumption in GDP and average share of exports in GDP, all from the Penn World Tables. Table 15 lists the predictor variables and covariate balance of Ecuador and Synthetic Ecuador.

[27] *The Economist,* June 10th, 2014.
[28] *The Economist*, February 18th, 2017.
[29] As we mentioned above, the threat of expropriation only makes up a part of this index and we do not have access to data for the sub-components.

As can be seen, the control matches Ecuadorian performance very well in the pre-treatment period (the RMSE is $240) and, unlike the previous case of Bolivia, continues to match in the treatment period. This indicates that the policy mix of the Correa administration had no influence on the evolution of real per capita GDP in Ecuador.

We show this formally in Figure 22, which graphs the deviation of Ecuadorian GDP from the control in each of the eight treatment years. The deviations are small and statistically insignificant, indicating that Correa was no improvement over what would have happened in Ecuador if he and his policies had not taken palce. However, Ecuador under Correa avoided the huge shortfall of GDP that Bolivia experienced under Morales.

Next we consider infant mortality in Ecuador. Due to data limitations, our sample period begins in 1975. Our control is 28% El Salvador, 29% Kuwait, 8% Nigeria, 21% Peru, and 15% Saudi Arabia, as shown in Table 14. Table 16 presents the indicator variables and their values for both Ecuador and its synthetic control. We use three lags of the outcome variable, which comes from the World Bank, along with the average share of government consumption in GDP, the average share of investment in GDP and the average value of the human capital index all from the Penn World Tables. Figure 23 plots infant mortality and its synthetic control before and after Correa. As can be seen, infant mortality falls monotonically over the sample and the control fits almost perfectly before Correa. In the treatment period though, Ecuador underperforms its control. Figure 24 shows that although those deviations are small, they are statistically significant. Infant mortality fell more slowly under Correa by a small but significant amount.

Finally, we consider inequality as measured by the Gini coefficient. In this case our sample begins in 1980 and the control is 49% Colombia, 39% Nigeria, and 12% Panama. In

this analysis, we use six lags of the Gini coefficient, labor compensation share, and the human capital index. Table 17 show the predictor variables match closely between actual Ecuador and the synthetic, suggesting the synthetic not only tracks inequality in the pre-treatment period, but resembles the Ecuador along other pertinent dimensions as well. As Figure 25 shows, Ecuador's Gini is also volatile, rising by 10 points in a little over 10 years and then falling by 10 points. Unlike the case of Bolivia, though, we are able to find a control that adequately mimics Ecuador's Gini in the pre-treatment period. During the Correa era, we see that inequality in Ecuador fell by more than the prediction of the control, but Figure 26 shows that these sized deviations are common in the data and thus not statistically significant.

To summarize the results for Ecuador, we find that starting around 2000, per-capita GDP rose rapidly and inequality fell rapidly. However, the Correa administration had no measurable impact on these pre-existing trends. The one area where we find a significant impact is in infant mortality, though there we find that the Correa regime underperformed its control by a small but significant amount.

V. Discussion

One thing is clear in our results. In none of the four countries did the Populist 2.0 treatment raise real GDP per-capita over what the "business as usual" synthetic control predicted. And in the cases of Nicaragua, Venezuela, and Bolivia, real income dramatically underperformed relative to the control. This leads us to ask the question: why did things go so badly in those countries while staying on the status quo path in Ecuador?

When we look at the policy mixes of these regimes, the thing that stands out is that the countries whose real incomes underperformed are the countries that practiced significant expropriation / nationalization and not just for natural resources but for sizeable chunks of the overall economy as well. For all his rhetoric, Correa did not nationalize at anywhere near the level of the Sandinistas, Chavez, or Morales. Recall that

While the above is a far cry from proof, it is a sensible result. Free enterprise makes money like nothing else we know of. It would be weird if, for example, the main policy difference between the status quo countries and the severe underperformers was, say, whether the legislature was unicameral or bicameral!

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TABLE 1: Donor Countries by Case

	Analysis		
Donor Country	Inequality	Income (Nicaragua)	Infant Mortality (Nicaragua)
Algeria	✗	✓	✓
Argentina	✓	✓	✗
Brazil	✓	✓	✓
Canada	✓	✓	✓
Chile	✓	✓	✓
Colombia	✓	✓	✓
Costa Rica	✓	✓	✓
El Salvador	✗	✓	✓
Guatemala	✓	✓	✓
Honduras	✗	✓	✓
Indonesia	✓	✓	✓
Iran	✓	✓	✗
Iraq	✗	✗	✗
Kuwait	✗	✗	✗
Mexico	✓	✓	✓
Nigeria	✓	✓	✓
Norway	✓	✓	✓
Panama	✓	✓	✓
Paraguay	✗	✓	✓
Peru	✓	✓	✓
Saudi Arabia	✗	✗	✗
United Arab Emirates	✗	✗	✗
United States	✓	✓	✓
Uruguay	✓	✓	✓

Note. Due to various data omissions, we are not able to use the full donor pool in all analyses. Although attempts are made in some instances to interpolate data, we choose instead to omit some countries in cases where too much interpolation is required. This table lists the full donor pool and the cases in which a donor may be omitted. A check indicates that the donor is included while an x indicates the donor has insufficient data and was omitted. The "Inequality" table represents the donors used in all "Inequality" analyses (for both Ecuador and Venezuela). The first Sandinista treatmeant takes place in 1979 a period which lacks the data coverage of later periods. Thus additional omissions are made in the Nicaraguan analyses. In all other country-variable pairs, all donors are used.

TABLE 2 - SUMMARY STATISTICS

Variable	Mean	Standard Deviation	*n*	Description	Source
GDP Per Capita	$16,429.82	$27,419.96	1260	Measured in 2011 US$.	Penn World Table
Human Capital Index	**2.142**	**0.594**	**1260**	**Index based on years of schooling and returns to education.**	**Penn World Table**
Capital Stock Per Capita	$46,502.69	$82,252.51	1260	Measured in 2011 US$.	Penn World Table
Government Consumption Share	**0.162**	**0.092**	**1260**	**Share of current government consumption at current PPP.**	**Penn World Table**
Export Share	0.202	0.160	1260	Share of merchandise exports at current PPP.	Penn World Table
Gross Capital Formation Share	**0.216**	**0.092**	**1260**	**Share of gross capital formation at current PPP.**	**Penn World Table**
Labor Compensation Share	0.474	0.132	1125	Share of labour compensation in GDP at current national prices.	Penn World Table
Infant Mortality	**40.770**	**32.498**	**1257**	**Infant mortality rate per 1,000 live births.**	**World Bank**
Gini	42.983	8.257	811	Estimate of Gini index of inequality in equivalized household income.	SWIID
Polity2	**2.461**	**7.394**	**1207**	**Measures the quality of political institutions. Ranges from -10 to 10.**	**Polity IV Project**

Notes. The summary statistics are calcuated for all countries, both donors and treated, from 1970 to 2014. The table includes brief descriptions of the variables as well as their respective source.

TABLE 3 - Summary of Shenanigans

Shenanigan	Venezuela	Bolivia	Ecuador	Nicaragua
New constitution*	Yes	Yes	Yes	No
High court packing	Yes	No	Yes	No
Allowed for re-election**	Yes	Yes	Yes	Yes
Expropriation/Nationalization***	Yes	Yes	No	No
Dissolved Congress****	No	No	Yes	No
Ruled by decree	Yes	No	Yes	Yes
Changed legislative structure*****	Yes	No	No	No

* Venezuela (1999), Bolivia (2009), and Ecuador (2008)

** Venezuela (1999), Bolivia (2009), Ecuador (2008), and Nicaragua (2011).

*** Correa frequently threatened oil nationalization but never followed through.

**** Ecuador (2007). Daniel Ortega threatened to dissolve Congres sin 2010 and during the following year, the Supreme Electoral Council expelled opposition from the legislature. Thale (2016).

***** Venezuela (1999) from a bicameral to a unicameral body. The Nicaraguan legislature was changed from a bicameral institution to a unicameral one under the 1987 Constitution that was implemented during Danial Ortega's first presidency.

TABLE 4: Nicaragua's Estimated Synthetic Control Weights by Outcome Variable

	Outcome Variable	
	Income	Infant Mortality
Algeria	0.00	**0.50**
Argentina	0.00	-
Brazil	0.00	**0.02**
Canada	0.00	**0.01**
Chile	**0.05**	**0.06**
Colombia	0.00	**0.02**
Costa Rica	0.00	**0.15**
El Salvador	0.00	**0.03**
Guatemala	0.00	**0.02**
Honduras	**0.61**	**0.02**
Indonesia	0.00	**0.02**
Iran	0.00	-
Iraq	-	-
Kuwait	-	-
Mexico	**0.21**	**0.01**
Nigeria	0.00	**0.08**
Norway	0.00	**0.01**
Panama	0.00	**0.01**
Paraguay	0.00	**0.01**
Peru	0.00	**0.02**
Saudi Arabia	-	-
United Arab Emirates	-	-
United States	**0.13**	**0.01**
Uruguay	0.00	**0.01**

Note. Columns show the estimated weight for the synthetic Nicaragua. Each column represents an outcome variable, labelled at the top of the column. Values are in percentage points. Donors that receive a positive weight are in bold for the reader to more easily identify. Values are rounded, so the columns may not sum to one. If a line appears through a cell, it indicates that the donor is not included in the particular analysis as it lacked sufficient data to include in the donor pool.

TABLE 5: NICARAGUA'S INCOME PREDICTOR MEANS

Variables	Nicaragua	Synthetic Nicaragua
GDP per Capita (1960)	$4,476.47	$4,983.69
GDP per Capita (1964)	$5,877.65	$5,639.43
GDP per Capita (1968)	$6,422.17	$6,407.12
GDP per Capita (1972)	$6,439.35	$6,796.56
GDP per Capita (1975)	$6,527.42	$6,848.44
GDP per Capita (1977)	$7,999.42	$7,638.90
Human Capital Index	1.40	1.72
Gross Capital Formation Share	0.19	0.17
RMSPE	--	288.64

Note. This table shows the values of indicator variables for Nicaragua and synthetic Nicaragua in the pre-treatment period (1970-1998). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of

TABLE 6: NICARAGUA'S INFANT MORTALITY PREDICTOR MEANS

Variables	Nicaragua	Synthetic Nicaragua
Infant Mortality (1964)	128.00	127.93
Infant Mortality (1968)	121.40	121.37
Infant Mortality (1973)	108.30	108.27
Infant Mortality (1977)	91.60	91.57
Human Capital Index	1.40	1.40
Gross Capital Formation Share	1.40	1.40
RMSPE	--	0.43

Note. This table shows the values of indicator variables for Nicaragua and synthetic Nicaragua in the pre-treatment period (1960-1979). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 7: Venezuela's Estimated Synthetic Control Weights by Dependent Variable

	Outcome Variable		
	Income	Infant Mortality	Inequality
Algeria	0.00	0.00	0.00
Argentina	0.00	0.00	0.00
Brazil	0.00	0.00	0.00
Canada	0.00	0.00	**0.32**
Chile	0.00	0.00	0.00
Colombia	0.00	0.00	0.00
Costa Rica	0.00	0.00	0.00
El Salvador	**0.17**	0.00	0.00
Guatemala	0.00	0.00	0.00
Honduras	0.00	0.00	0.00
Indonesia	0.00	0.00	**0.15**
Iran	0.00	0.00	0.00
Iraq	0.00	0.00	0.00
Kuwait	0.00	**0.19**	0.00
Mexico	0.00	0.00	0.00
Nigeria	**0.44**	0.00	**0.27**
Norway	**0.21**	**0.12**	0.00
Panama	0.00	**0.40**	0.00
Paraguay	0.00	**0.30**	0.00
Peru	**0.15**	0.00	**0.26**
Saudi Arabia	**0.02**	0.00	0.00
United Arab Emirates	0.00	0.00	0.00
United States	0.00	0.00	0.00
Uruguay	0.00	0.00	0.00

Note. Columns show the estimated weight for the synthetic Venezuela. Each column represents an outcome variable, labelled at the top of the column. Values are in percentage points. Donors that receive a positive weight are in bold for the reader to more easily identify. Values are rounded, so the columns may not sum to one.

TABLE 8: VENEZUELA'S INEQUALITY PREDICTOR MEANS

Variables	Venezuela	Synthetic Venezuela	OPEC Average	Latin America Average	Argentina
Gin Coefficient (1981)	37.84	37.87	36.98	48.44	37.82
Gin Coefficient (1985)	39.48	39.11	38.69	47.08	38.76
Gin Coefficient (1990)	38.50	39.43	39.87	47.75	41.56
Gin Coefficient (1998)	42.99	42.65	41.92	48.61	44.46
Labor Compensation Share	0.43	0.48	0.36	0.52	0.51
Gross Capital Formation Share	0.23	0.18	0.18	0.18	0.15
GDP Per Capita (1981)	10264.77	10999.05	3741.63	6766.08	4470.22
GDP Per Capita (1990)	8580.86	11288.62	2369.86	6598.31	5945.50
GDP Per Capita (1998)	6408.24	12993.84	3590.62	9465.36	15587.75
RMSPE	--	0.72	1.32	8.17	1.64

Note. This table shows the values of indicator variables for different comparison groups. In doing so, it illustrates the advantage of the synthetic control, which better fits the behavior of the true Venezuela in the pre-treatment period (1980-1998). We compare the synthetic to other potential counterfactuals: Latin America, OPEC, and Argentina We select Argentina as it is the single country that best minimizes pre-treatment RMSPE with Venezuela. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 9: VENEZUELA'S INFANT MORTALITY PREDICTOR MEANS

Variables	Venezuela	Synthetic Venezuela	OPEC Average	Latin America Average	Panama
Infant Mortality (1973)	44.20	44.48	98.33	72.60	45.40
Infant Mortality (1985)	29.60	29.43	56.48	43.45	30.10
Infant Mortality (1998)	20.00	20.35	38.54	25.61	22.70
Gross Capital Formation	0.27	0.23	0.28	0.17	0.20
Government Consumption	0.26	0.19	0.19	0.15	0.22
Human Capital Index	1.80	2.18	1.59	1.96	2.25
RMSPE	--	0.21	35.90	18.30	1.08

Note. This table shows the values of indicator variables for different comparison groups. In doing so, it illustrates the advantage of the synthetic control, which better fits the behavior of the true Venezuela in the pre-treatment period (1973-1998). We compare the synthetic to other potential counterfactuals: Latin America, OPEC, and Panama We select Panama as it is the single country that best minimizes pre-treatment RMSPE with Venezuela. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 10: VENEZUELA'S INEQUALITY PREDICTOR MEANS

Variables	Venezuela	Synthetic Venezuela	OPEC Average	Latin America Average	Argentina
Gin Coefficient (1981)	37.84	37.87	36.98	48.44	37.82
Gin Coefficient (1985)	39.48	39.11	38.69	47.08	38.76
Gin Coefficient (1990)	38.50	39.43	39.87	47.75	41.56
Gin Coefficient (1998)	42.99	42.65	41.92	48.61	44.46
Labor Compensation Share	0.43	0.48	0.36	0.52	0.51
Gross Capital Formation Share	0.23	0.18	0.18	0.18	0.15
GDP Per Capita (1981)	10264.77	10999.05	3741.63	6766.08	4470.22
GDP Per Capita (1990)	8580.86	11288.62	2369.86	6598.31	5945.50
GDP Per Capita (1998)	6408.24	12993.84	3590.62	9465.36	15587.75
RMSPE	--	0.72	1.32	8.17	1.64

Note. This table shows the values of indicator variables for different comparison groups. In doing so, it illustrates the advantage of the synthetic control, which better fits the behavior of the true Venezuela in the pre-treatment period (1980-1998). We compare the synthetic to other potential counterfactuals: Latin America, OPEC, and Argentina We select Argentina as it is the single country that best minimizes pre-treatment RMSPE with Venezuela. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 11: Bolivia's Estimated Synthetic Control Weights by Outcome Variable

		Outcome Variable		
	ID	Income	Infant Mortality	Inequality
Algeria	1	0.00	0.00	-
Argentina	2	0.00	0.00	0.00
Brazil	4	0.00	0.00	0.00
Canada	5	0.00	0.00	0.00
Chile	6	0.00	0.00	0.00
Colombia	7	0.00	0.00	**0.45**
Costa Rica	8	0.00	0.00	0.00
El Salvador	10	**0.43**	0.00	-
Guatemala	11	0.00	0.00	0.00
Honduras	12	0.00	0.00	-
Indonesia	13	**0.36**	0.00	0.00
Iran	14	0.00	0.00	0.00
Iraq	15	0.00	0.00	-
Kuwait	16	0.00	0.00	-
Mexico	17	0.00	0.00	0.00
Nigeria	19	**0.09**	**0.35**	**0.18**
Norway	20	0.00	0.00	0.00
Panama	21	0.00	0.00	0.00
Paraguay	22	**0.01**	0.00	-
Peru	23	**0.12**	**0.65**	**0.37**
Saudi Arabia	24	0.00	0.00	-
United Arab Emirates	25	0.00	0.00	-
United States	26	0.00	0.00	0.00
Uruguay	27	0.00	0.00	0.00

Note. Columns show the estimated weight for the synthetic Bolivia. Each column represents an outcome variable, labelled at the top of the column. Values are in percentage points. Donors that receive a positive weight are in bold for the reader to more easily identify. Values are rounded, so the columns may not sum to one.

TABLE 12: BOLIVIA'S INCOME PREDICTOR MEANS

Variables	Bolivia	Synthetic Bolivia
GDP per Capita (1970)	$1,708.65	$1,571.92
GDP per Capita (1988)	$2,002.19	$2,027.95
GDP per Capita (1995)	$2,848.57	$2,891.06
GDP per Capita (1998)	$3,098.80	$3,067.73
Human Capital Index (1970)	1.65	1.35
Human Capital Index (1988)	2.10	1.71
Human Capital Index (1995)	2.32	1.90
Capital Stock per Capita	$3,752.51	$3,731.65
Government Consumption Share	0.22	0.19
Merchandise Exports	0.17	0.24
RMSPE	--	100.81

Note. This table shows the values of indicator variables for Bolivia and synthetic Bolivia in the pre-treatment period (1970-1998). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 13: BOLIVIA'S INFANT MORTALITY PREDICTOR MEANS

Variables	Bolivia	Synthetic Bolivia
Infant Mortality (1999)	61.40	61.18
Infant Mortality (2001)	56.20	56.42
Infant Mortality (2003)	51.20	52.00
Infant Mortality (2004)	48.80	49.93
Infant Mortality (2005)	46.60	47.96
Gross Capital Formation Share	0.12	0.20
Government Consumption	0.22	0.23
Human Capital Index	2.16	1.66
RMSPE	--	6.39

Note. This table shows the values of indicator variables for Ecuador and synthetic Ecuador in the pre-treatment period (1970-1998). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 14: Ecuador's Estimated Synthetic Control Weights by Outcome Variable

	Outcome Variable		
	Income	Infant Mortality	Inequality
Algeria	**0.22**	0.00	-
Argentina	0.00	0.00	0.00
Brazil	0.00	0.00	0.00
Canada	**0.02**	0.00	0.00
Chile	0.00	0.00	0.00
Colombia	0.00	0.00	**0.49**
Costa Rica	0.00	0.00	0.00
El Salvador	**0.15**	**0.28**	-
Guatemala	0.00	0.00	0.00
Honduras	0.00	0.00	-
Indonesia	0.00	0.00	0.00
Iran	0.00	0.00	0.00
Iraq	0.00	0.00	-
Kuwait	0.00	**0.29**	-
Mexico	0.00	0.00	0.00
Nigeria	0.00	**0.08**	**0.39**
Norway	0.00	0.00	0.00
Panama	0.00	0.00	**0.12**
Paraguay	**0.50**	0.00	-
Peru	**0.11**	**0.21**	0.00
Saudi Arabia	**0.01**	**0.15**	-
United Arab Emirates	0.00	0.00	-
United States	0.00	0.00	0.00
Uruguay	0.00	0.00	0.00

Note. Columns show the estimated weight for the synthetic Ecuador. Each column represents an outcome variable, labelled at the top of the column. Values are in percentage points. Donors that receive a positive weight are in bold for the reader to more easily identify. Values are rounded, so the columns may not sum to one.

TABLE 15: ECUADOR'S INCOME PREDICTOR MEANS

Variables	Ecuador	Synthetic Ecuador
GDP per Capita (1970)	$3,109.85	$3,334.63
GDP per Capita (1988)	$4,761.13	$4,708.54
GDP per Capita (1995)	$4,941.47	$4,921.53
GDP per Capita (1998)	$4,940.43	$5,124.37
Human Capital Index (1970)	1.78	1.51
Human Capital Index (1988)	2.17	1.85
Human Capital Index (1995)	2.33	2.02
Capital Stock per Capita	$11,644.12	$12,654.21
Government Consumption Share	0.23	0.16
Export Share	0.16	0.16
RMSPE	--	240.26

Note. This table shows the values of indicator variables for Ecuador and synthetic Ecuador in the pre-treatment period (1970-1998). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 16: ECUADOR'S INFANT MORTALITY PREDICTOR MEANS

Variables	Ecuador	Synthetic Ecuador
Infant Mortality (1973)	88.40	88.42
Infant Mortality (1985)	54.60	54.42
Infant Mortality (1998)	30.70	31.30
Gross Capital Formation Share	0.21	0.21
Government Consumption	0.24	0.22
Human Capital Index	2.21	1.86
RMSPE	--	0.43

Note. This table shows the values of indicator variables for Ecuador and synthetic Ecuador in the pre-treatment period (1970-1998). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

TABLE 17: ECUADOR'S INEQUALITY PREDICTOR MEANS

Variables	Ecuador	Synthetic Ecuador
Gini Coefficient (1981)	46.17	46.75
Gini Coefficient (1985)	44.42	45.09
Gini Coefficient (1988)	43.22	44.62
Gini Coefficient (1992)	48.75	47.73
Gini Coefficient (1998)	52.57	50.68
Gini Coefficient (2007)	47.93	48.86
Labor Compensation Share	0.48	0.52
Human Capital Index	2.29	1.80
RMSPE	--	1.36

Note. This table shows the values of indicator variables for Ecuador and synthetic Ecuador in the pre-treatment period (1980-1998). The table allows the reader to compare the behavior of the dependent variable and covariates prior to the treatment. Variables are averaged across the pre-treatment period, unless otherwise indicated. Please refer to table 1 for a description of the variables. The final row shows the root mean square prediction error for the unit of comparison.

Figure 1: Latin Populism's Aggregate Effect upon Income

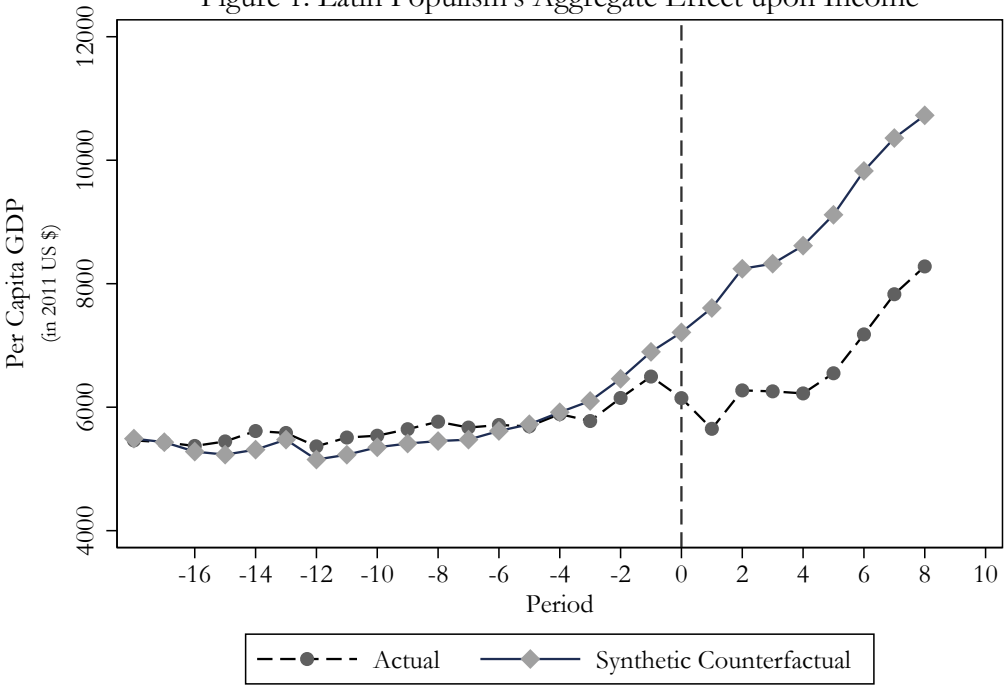
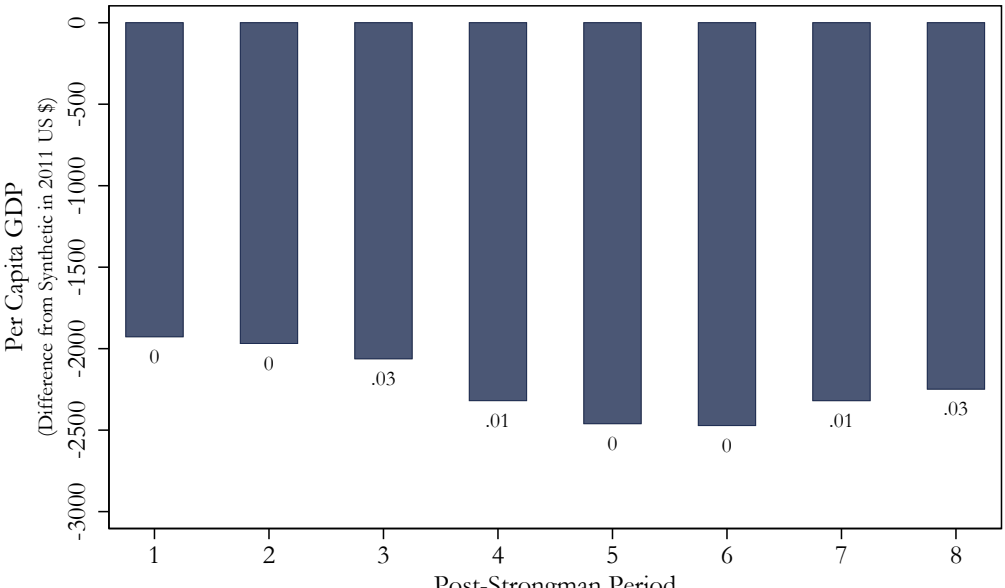


Figure 2: Latin Strongmen's Aggregate Effect upon Income



Note. This figure shows the estimated treatment effect upon per capita GDP for each period following the Latin Strongmen treatment. Effects in orange are significant at the .10 level, effects in blue at the .05 level, and in grey, insignificant. Since the treatments occur at varying periods for each country of analysis, the number of post-treatment periods in the aggregate analysis is limited to 8, which is the minimum number of post-treatment periods of all the analyzed countries.

Figure 3: Latin Populism's Aggregate Effect upon Infant Mortality

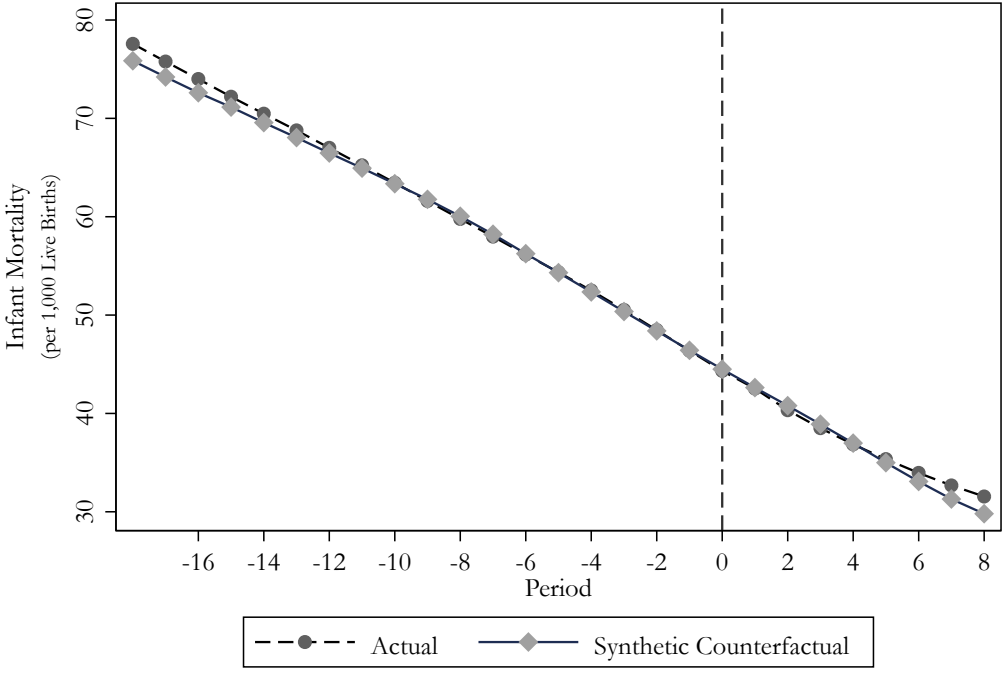
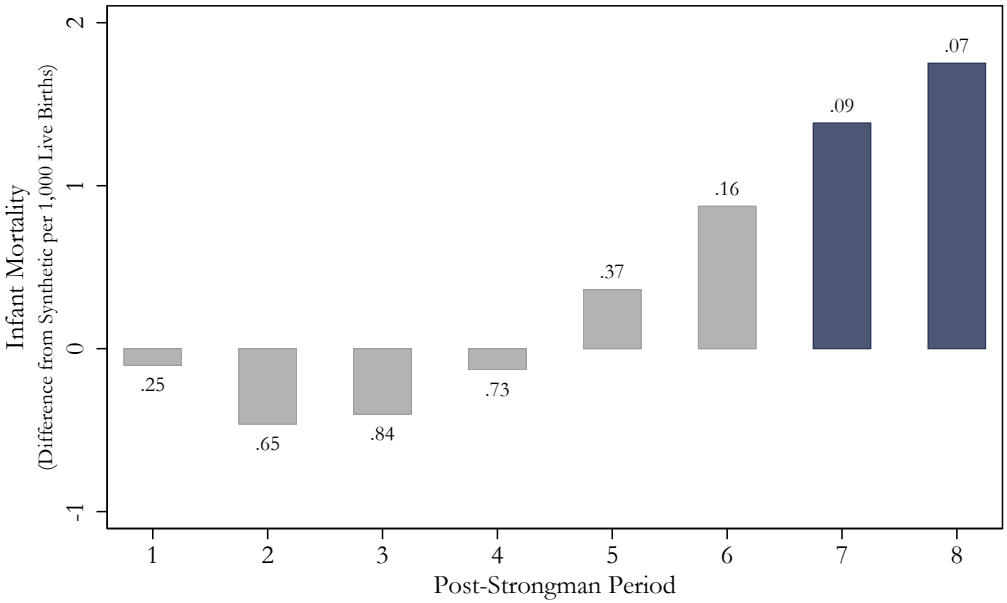


Figure 4: Latin Strongmen's Aggregate Effect upon Infant Mortality



Note. This figure shows the estimated treatment effect upon infant mortality for each period following the Latin Strongmen treatment. Effects in blue are significant at the .20 level and in grey, insignificant. Since the treatments occur at varying periods for each country of analysis, the number of post-treatment periods in the aggregate analysis is limited to 8, which is the minimum number of post-treatment periods of all the analyzed countries.

Figure 5: Latin Populism's Aggregate Effect upon Inequality

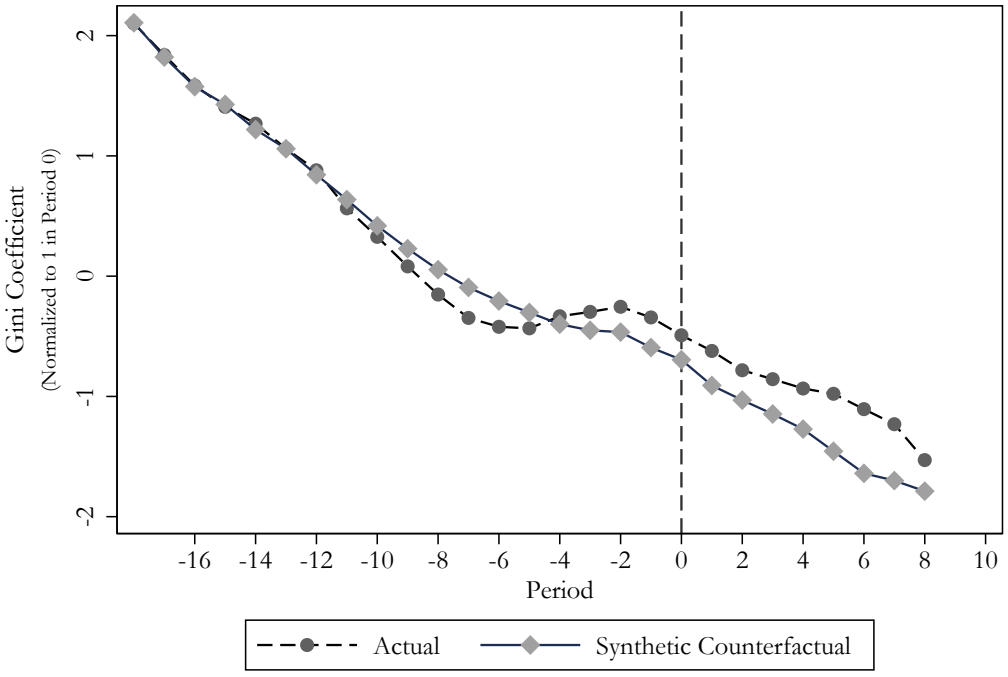
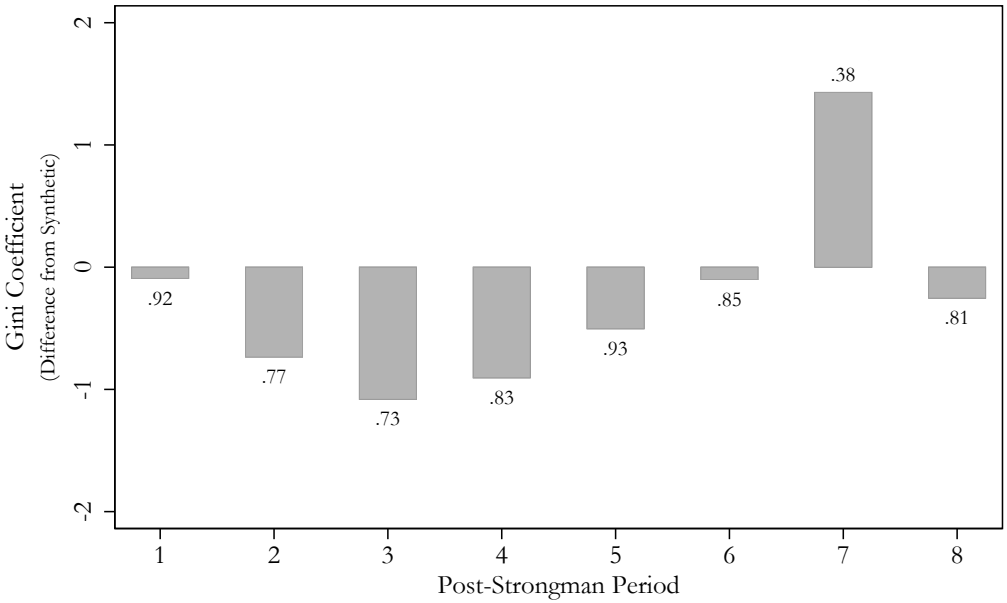
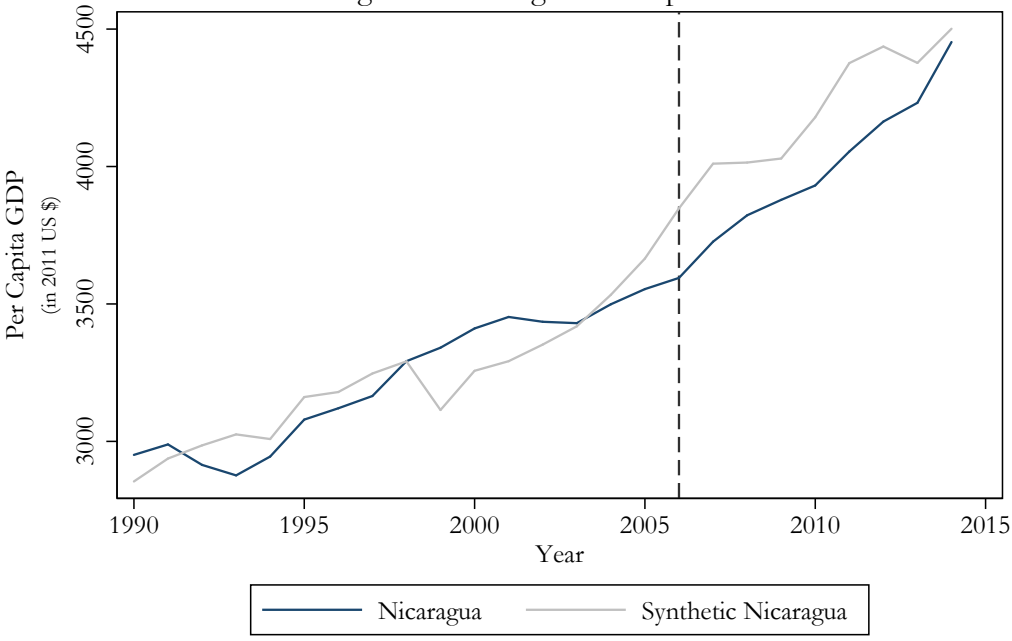


Figure 6: Latin Strongmen's Aggregate Effect upon Inequality



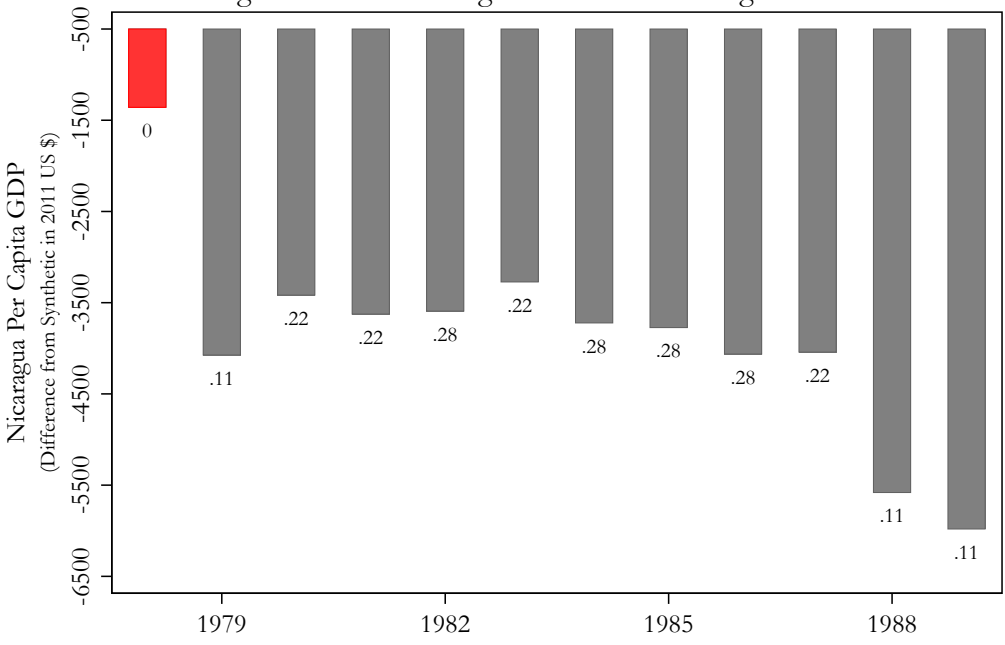
Note. This figure shows the estimated treatment effect upon inequality for each period following the Latin Strongmen treatment. Effects in orange are significant at the .10 level, effects in blue at the .05 level, and in grey, insignificant. Since the treatments occur at varying periods for each country of analysis, the number of post-treatment periods in the aggregate analysis is limited to 8, which is the minimum number of post-treatment periods of all the analyzed countries.

Figure 7: Nicaragua Per Capita GDP



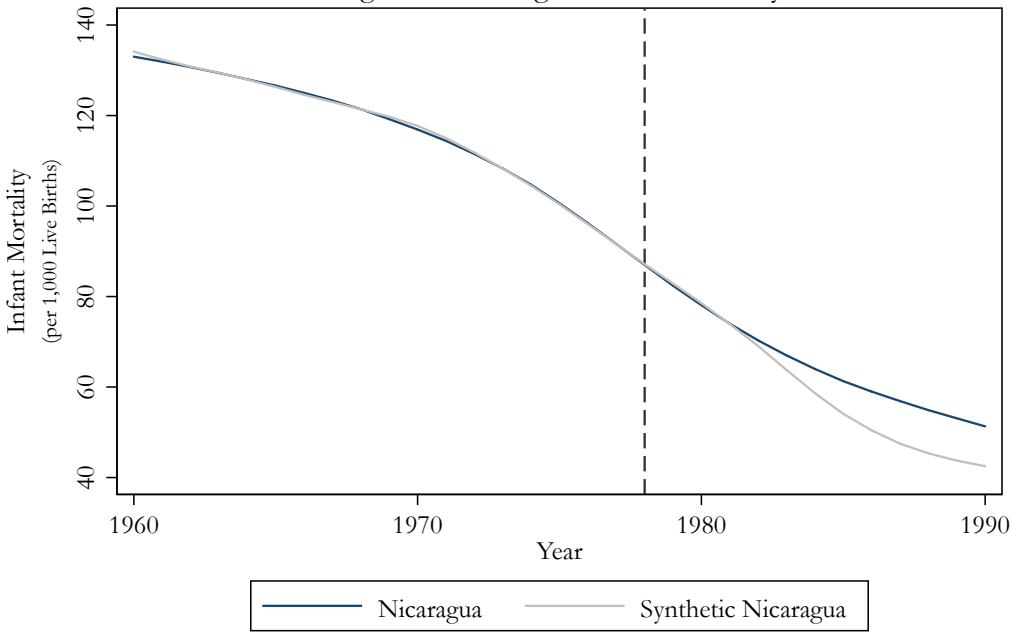
Note. This figure demonstrates the behavior of per capita GDP for Nicaragua and synthetic Nicaragua, pre- and post-treatment. The dashed vertical line indicates the Ortega treatment period.

Figure 8: Daniel Ortega's Effect on Nicaraguan Income



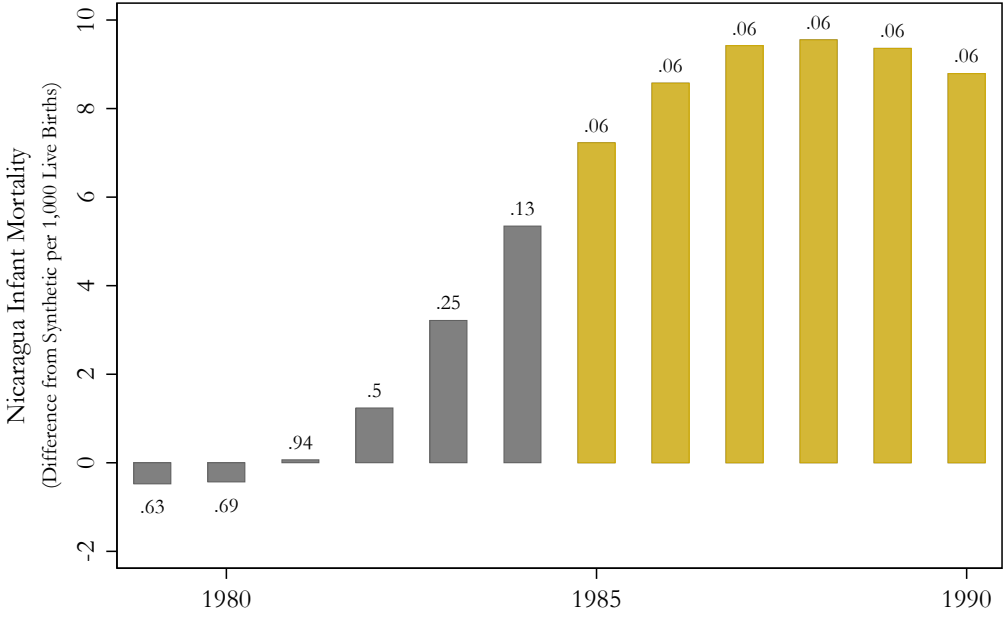
Note. This figure shows the estimated treatment effect upon per capita GDP for each period following the Ortega treatment. Effects in red are significant at the .05 level. Effects in grey are insignificant. The post-/pre-treatment RMSPE inferencing method yields a p-value of 0.636.

Figure 9: Nicaragua Infant Mortality



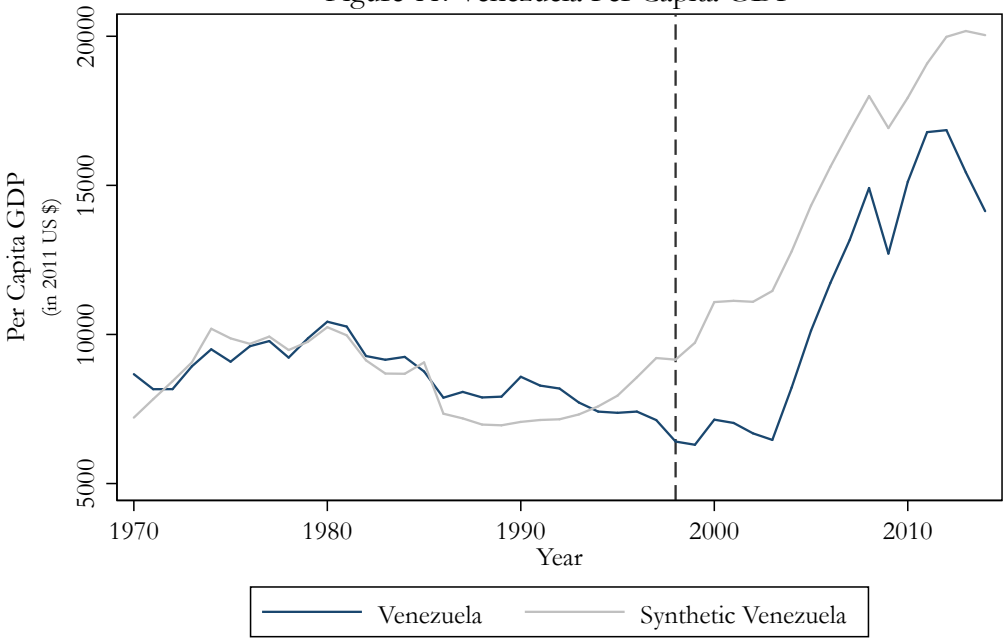
Note. This figure demonstrates the behavior of infant mortality for Nicaragua and synthetic Nicaragua, pre- and post-treatment. The dashed vertical line indicates the Chavez treatment period.

Figure 10: Daniel Ortega's Effect on Nicaraguan Infant Mortality



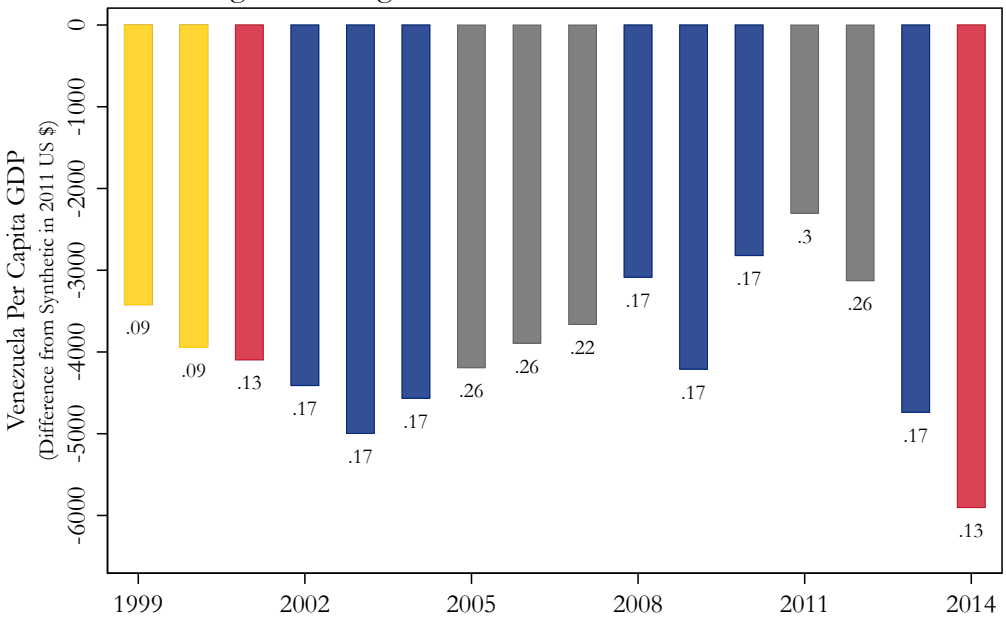
Note. This figure shows the estimated treatment effect upon infant mortality for each period following the Ortega treatment. Effects in gold at the .1 level. Effects in grey are insignificant. The post-/pre-treatment RMSPE inferencing method yields a p-value of .111.

Figure 11: Venezuela Per Capita GDP



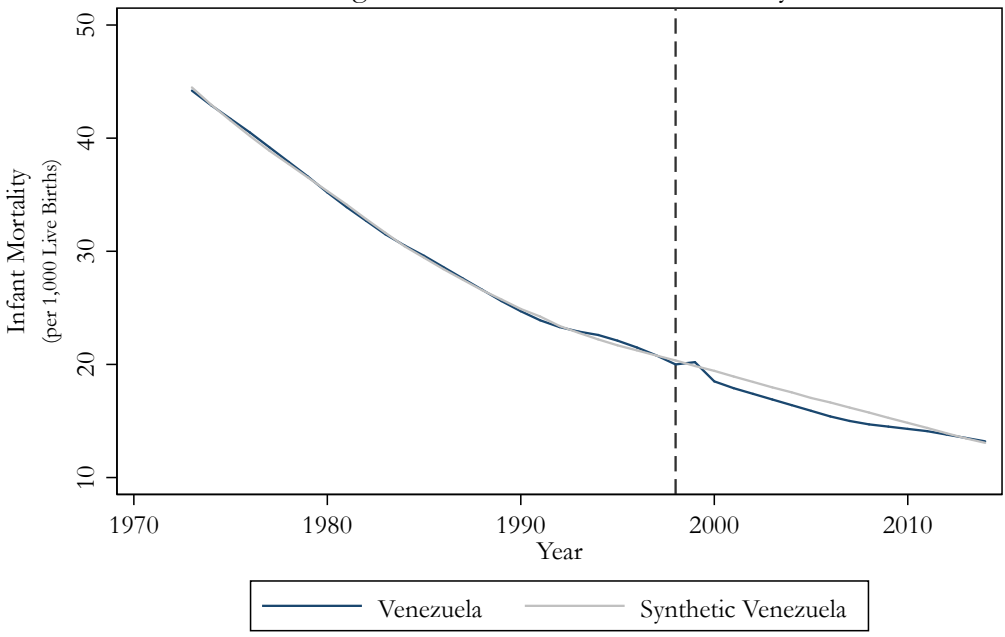
Note. This figure demonstrates the behavior of per capita GDP for Venezuela and synthetic Venezuela, pre- and post-treatment. The dashed vertical line indicates the Chavez treatment period.

Figure 12: Hugo Chavez's Effect on Venezuelan Income



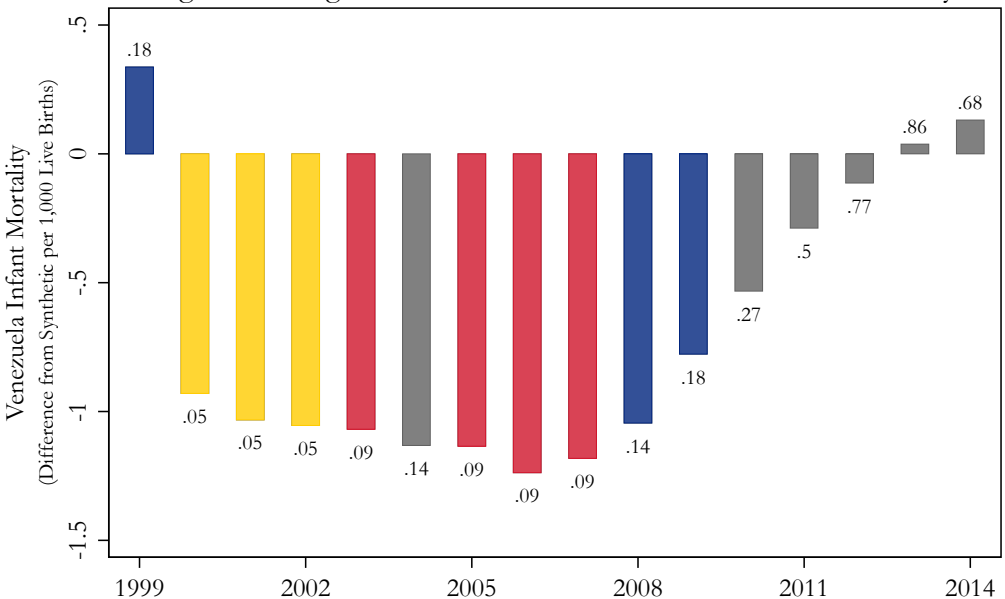
Note. This figure shows the estimated treatment effect upon per capita GDP for each period following the Chavez treatment. Effects in yellow are significant at the .09 level, effects in red at the .13 level, in blue at the .17 level. Effects in grey are insignificant. The post-/pre-treatment RMSPE inferencing method yields a p-value of 0.261.

Figure 13: Venezuela Infant Mortality



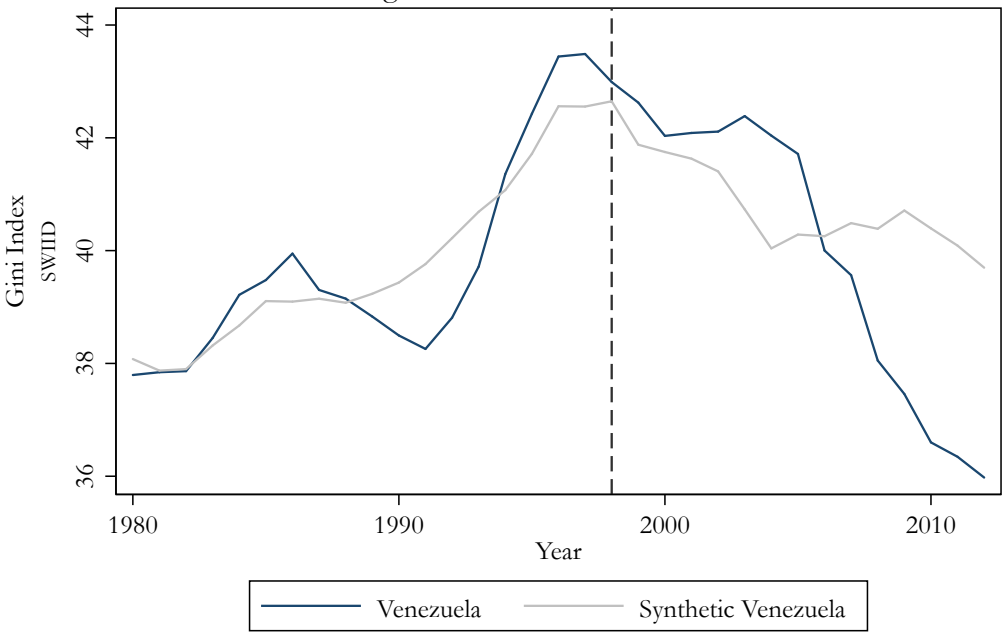
Note. This figure demonstrates the behavior of infant mortality for Venezuela and synthetic Venezuela, pre- and post-treatment. The dashed vertical line indicates the Chavez treatment period.

Figure 14: Hugo Chavez's Effect on Venezuelan Infant Mortality



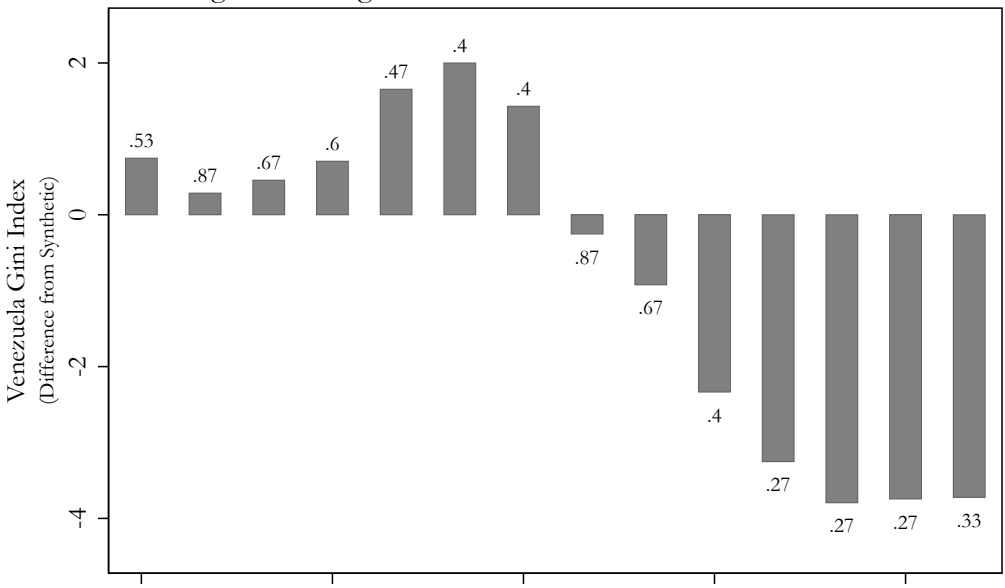
Note. This figure shows the estimated treatment effect upon infant mortality for each period following the Latin Strongmen treatment. Effects in blue are significant at the .01 level, effects in red at the .03 level, and in . The post-/pre-treatment RMSPE inferencing method yields a p-value of 0.048. Since the treatments occur at varying periods for each country of analysis, the number of post-treatment periods in the aggregate analysis is limited to 8, which is the minimum number of post-treatment periods of all the analyzed countries.

Figure 15: Venezuela Gini Index



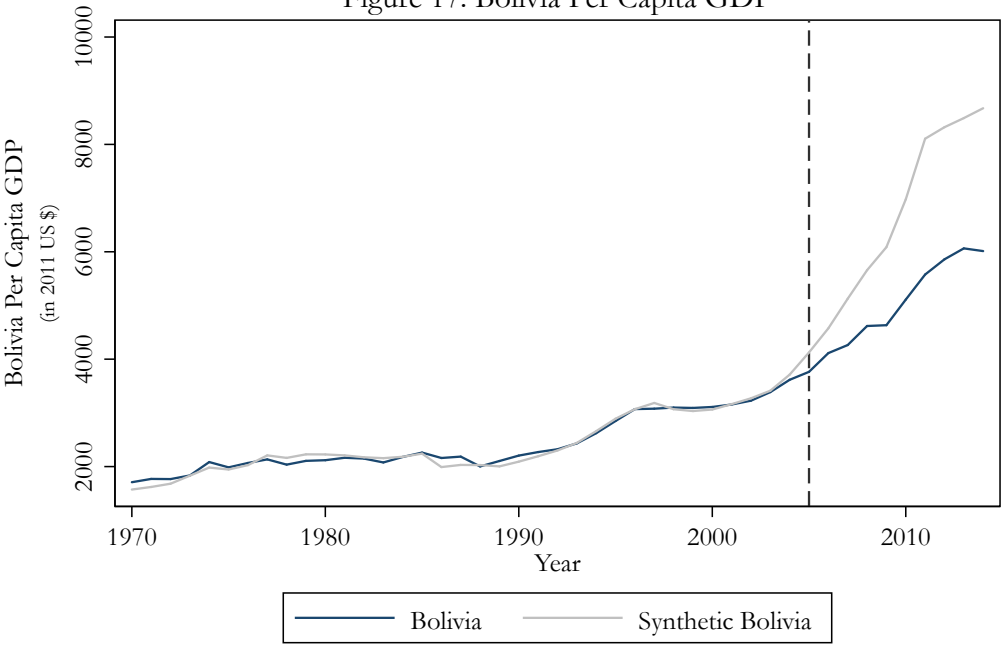
Note. This figure demonstrates the behavior of the Gini index for Venezuela and synthetic Venezuela, pre- and post-treatment. The dashed vertical line indicates the Chavez treatment period.

Figure 16: Hugo Chavez's Effect on Venezuelan Gini Index



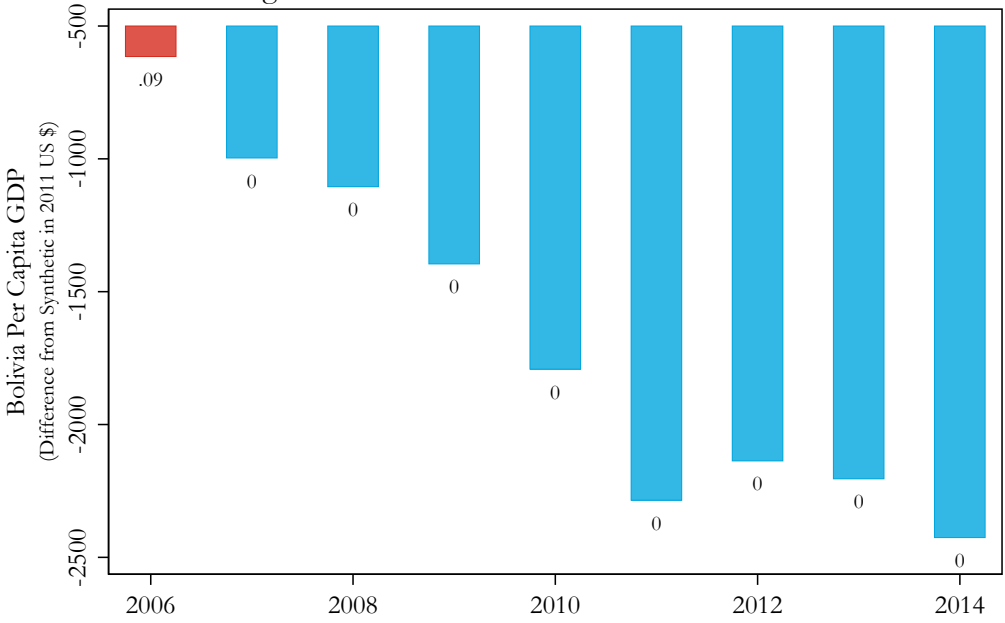
Note. This figure shows the estimated treatment effect upon inequality for each period following the Chavez treatment. Numbers above (or below) each bar display the p-value for each period. Effects in grey are insignificant. The post-/pre-treatment RMSPE inferencing method yields a p-value of 0.400.

Figure 17: Bolivia Per Capita GDP



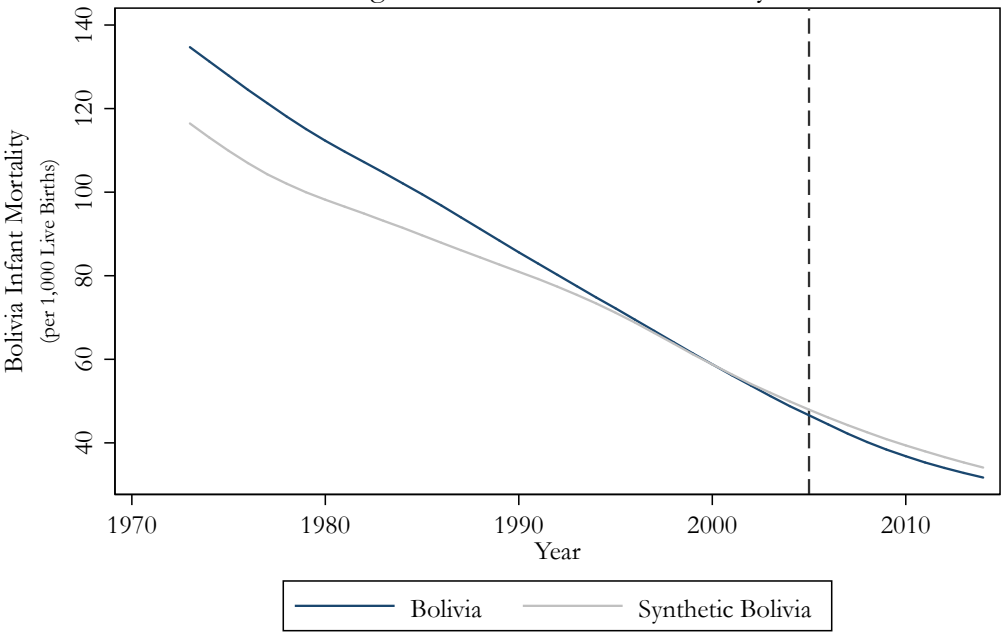
Note. This figure demonstrates the behavior of per capita GDP for Bolivia and synthetic Bolivia, pre- and post-treatment. The dashed vertical line indicates the Morales treatment period.

Figure 18: Evo Morales' Effect on Bolivian Income



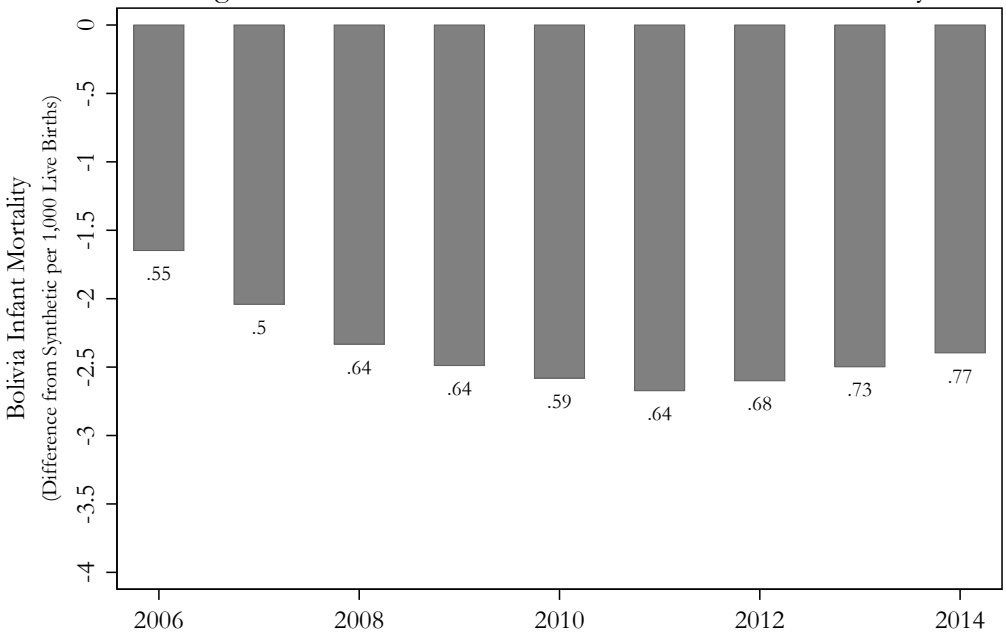
Note. This figure shows the estimated treatment effect upon inequality for each period following the Correa treatment. Numbers above (or below) each bar display the p-value for each period. Effects in blue are significant at the .01 level and effects in red at the .1 level. The post-/pre-treatment RMSPE inferencing process yields a p-value of 0.000.

Figure 19: Bolivia Infant Mortality



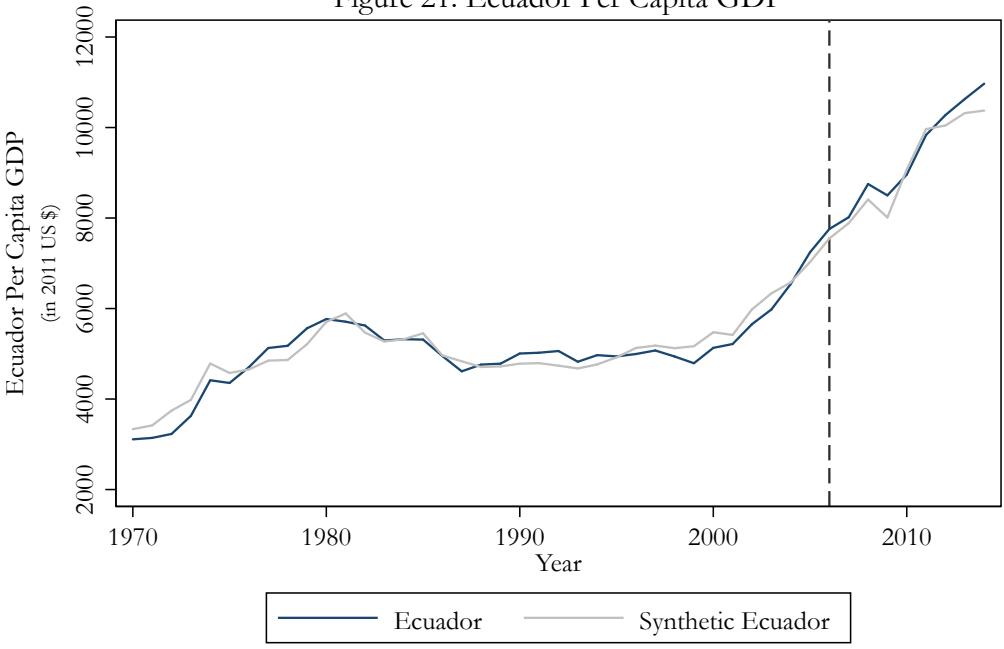
Note. This figure demonstrates the behavior of infant mortality for Bolivia and synthetic Bolivia, pre- and post-treatment. The dashed vertical line indicates the Morales treatment period.

Figure 20: Evo Morales' Effect on Bolivian Infant Mortality



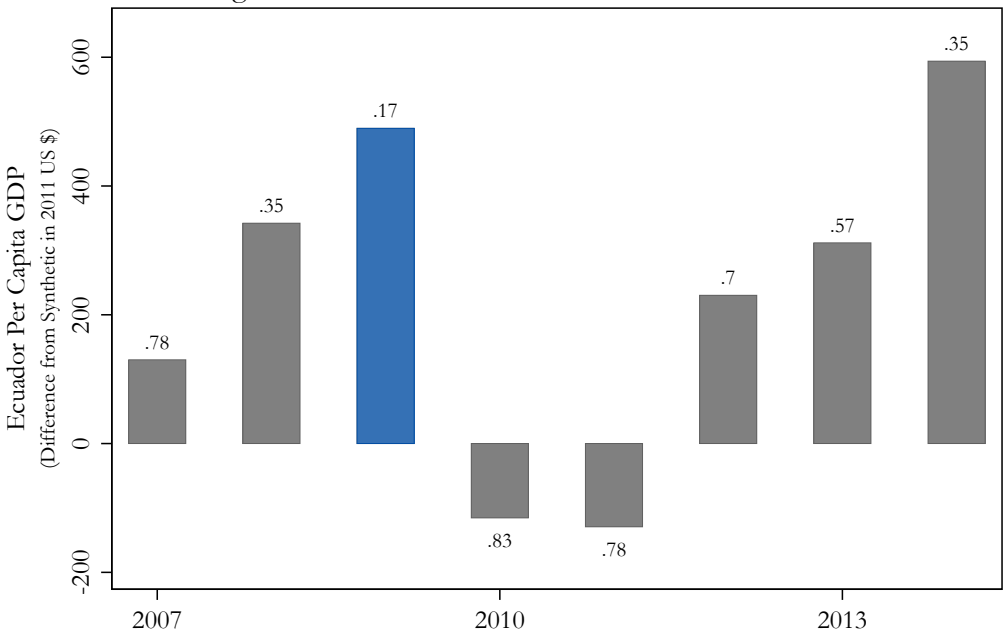
Note. This figure shows the estimated treatment effect upon infant mortality for each period following the Morales treatment. Effects in grey are insignificant.

Figure 21: Ecuador Per Capita GDP



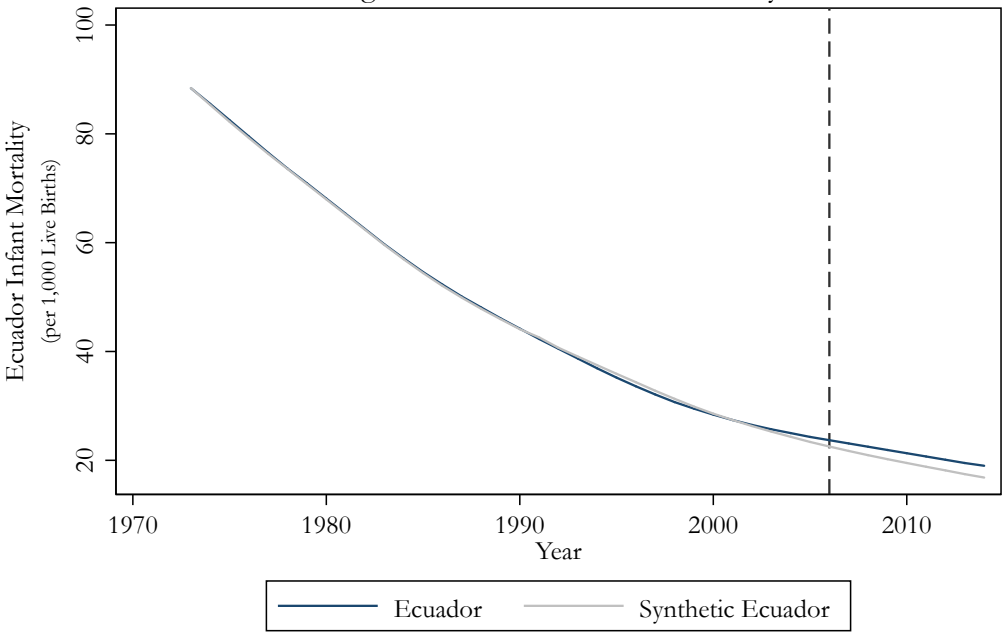
Note. This figure demonstrates the behavior of per capita GDP for Ecuador and synthetic Ecuador, pre- and post-treatment. The dashed vertical line indicates the Correa treatment period.

Figure 22: Rafael Correa's Effect on Ecuadorian Income



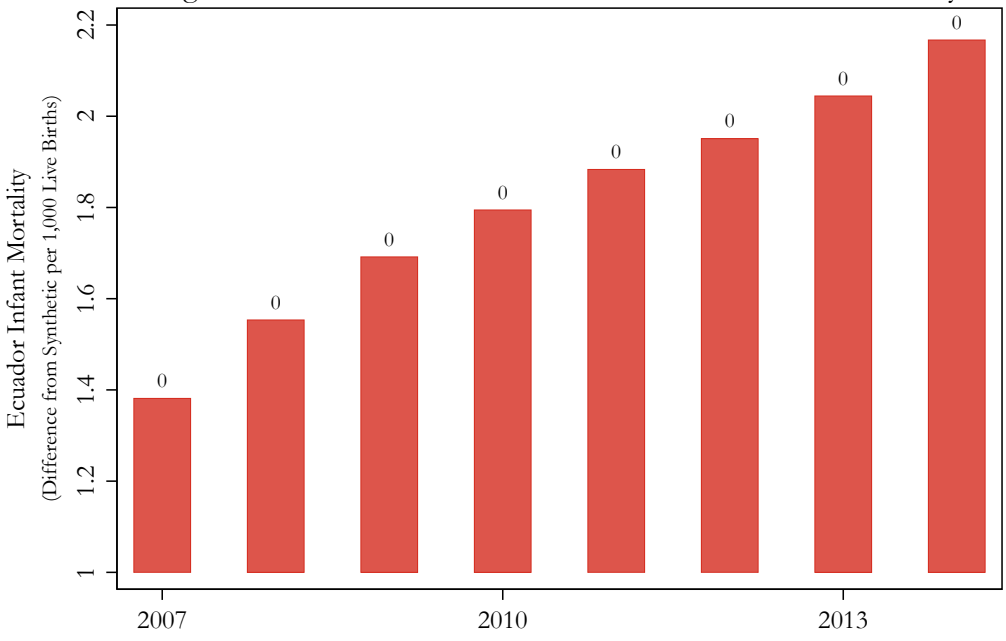
Note. This figure shows the estimated treatment effect upon per capita GDP for each period following the Correa treatment. Effects in blue are significant at the .17 level. Effects in grey are insignificant. The post-/pre-treatment RMSPE inferencing method yields a p-value of 0.739.

Figure 23: Ecuador Infant Mortality



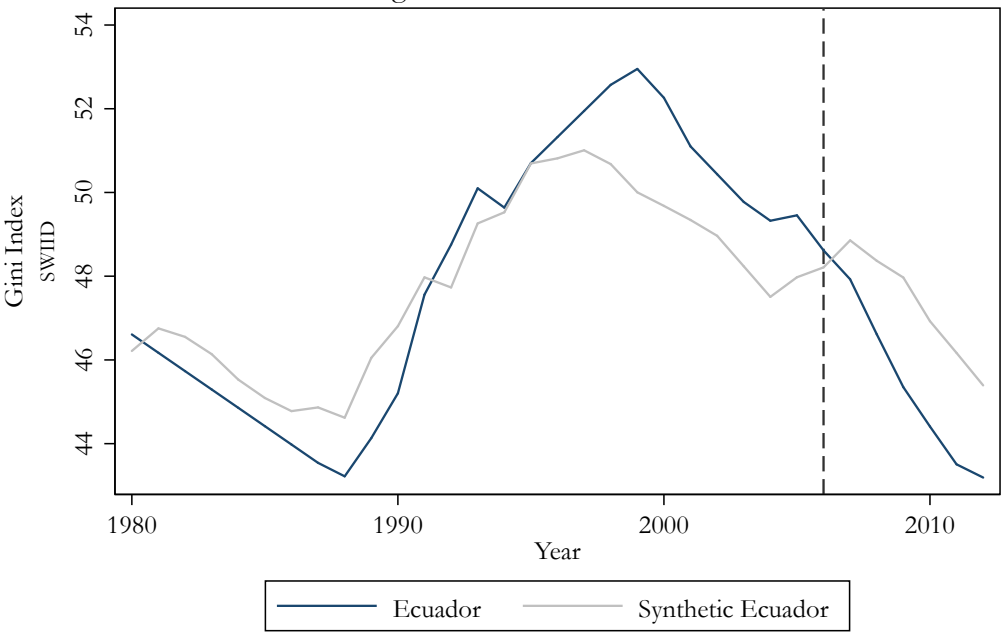
Note. This figure demonstrates the behavior of infant mortality for Ecuador and synthetic Ecuador, pre- and post-treatment. The dashed vertical line indicates the Correa treatment period.

Figure 24: Rafael Correa's Effect on Ecuadorian Infant Mortality



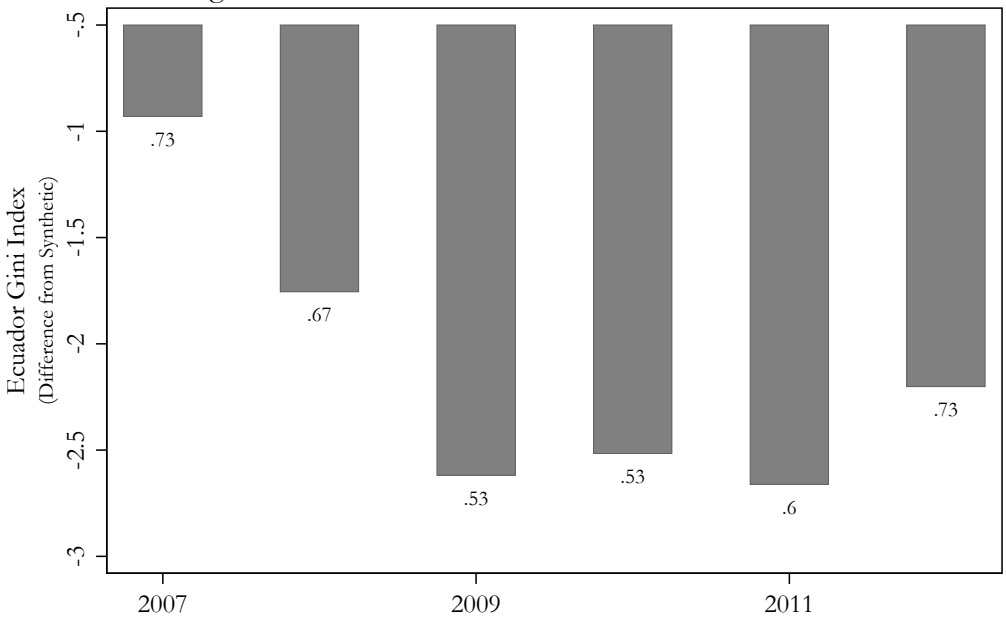
Note. This figure shows the estimated treatment effect upon infant mortality for each period following the Correa treatment. Effects in red are significant at the .00 level. The post-/pre-treatment RMSPE inferencing method yields a p-value of 0.000.

Figure 25: Ecuador Gini Index



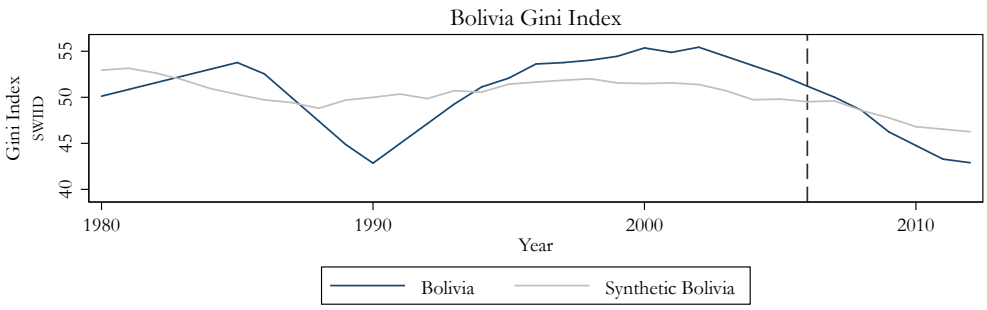
Note. This figure demonstrates the behavior of the Gini index for Ecuador and synthetic Ecuador, pre- and post-treatment. The dashed vertical line indicates the Correa treatment period.

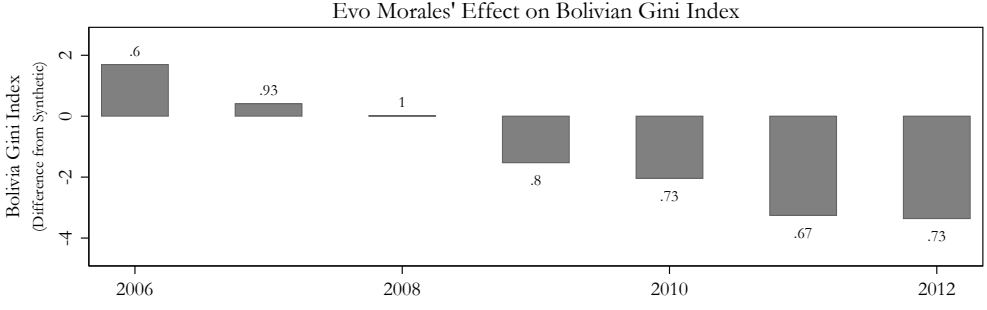
Figure 26: Rafael Correa's Effect on Ecuadorian Gini Index



Note. This figure shows the estimated treatment effect upon inequality for each period following the Correa treatment. Numbers above (or below) each bar display the p-value for each period. Effects in grey are insignificant. The post-/pre-treatment RMSPE inferencing method yields a p-value o 0.600.

Appendix A


Bolivia Gini Index
Gini Index
SWIID
40
45
50
55
1980
1990
2000
2010
Year
Bolivia
Synthetic Bolivia


Evo Morales' Effect on Bolivian Gini Index
Bolivia Gini Index
(Difference from Synthetic)
-4
-2
0
2
.6
.93
1
.8
.73
.67
.73
2006
2008
2010
2012