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## THE ECONOMIC EFFECT OF POPULIST RHETORIC IN HUNGARY

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**Abstract:** *The Hungarian government has been widely associated with populist rhetoric in the literature. Its length and uninterrupted government since 2010 create a unique opportunity to study in detail the effects of this kind of rhetoric on its macroeconomic performance. How does Hungary perform under a government characterised by populist rhetoric? The study reveals that populism carries a significant economic cost, as GDP at equal purchasing power parity in 2020 is 10.04% lower than a plausible alternative scenario where the current government was not elected, after a period of 10 years. Lack of addressing some persisting problems of the country, such as lack of competitiveness and institutional decay, might be the underlying dynamic in creating lasting damage to the economy. In this paper, we explore this topic using three different, but complementary techniques used to assess causality: Difference-in-Differences, Synthetic Difference-in-Differences, and the Synthetic Control Method.*

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**Keywords:** Hungary, synthetic control mechanism, populist rhetoric, economic growth.

### 1. Introduction

The anti-establishment rhetoric of politicians characterised by populist rhetoric has been unusually successful in Europe over the last two decades (Figure 2). As of 2023, we have five countries part of the European Union that are led by parties characterised by populist rhetoric (The PopuList). Four of them are in Central and Eastern Europe and are Bulgaria, Hungary, Poland, and Slovakia respectively. The remaining one is Italy. Hungary is a particularly exceptional example among these countries. The Fidesz party, currently in power since 2010, is the longest-lasting party characterised by populist rhetoric that has been in power without interruption in a democratic context. What are the consequences of this long-lasting example? Can we extrapolate its effects from its specific context? The null hypothesis behind this analysis

is that the policies undertaken by the Fidesz government in Hungary between 2010 and 2020 had no effect on the overall GDP of the country. The alternative hypothesis is that the policies undertaken by the Fidesz government overall had an effect on the GDP of the country. The hypothesis and the null-hypothesis are very macroeconomic in this nature, and we use three techniques and data widely used in these settings (The World Bank, 2019; Abadie, 2021).

Despite its length, the Hungarian case is also interesting for its apparent economic stability. It is widely believed among academics that populist leaders have negative effects on the economy and are likely to lead to their own downfall. Sachs (1990) and Dornbusch and Edwards (1990) were the leaders in this school of thought with their influential studies on the history of Latin America in the 1960s, 1970s, and 1980s. Sachs identified a "populist cycle" where short-term economic growth was achieved through an expansionary fiscal policy implemented by populist leaders, ultimately resulting in an economic and political crisis. Dornbusch and Edwards suggest that this cycle always ends up in a devaluation of the currency and ultimately damages the per capita income and purchasing power of the interested persons. More recent views suggest similar results even if with different mechanisms (Acemoglu, Egorov and Sonin, 2011).

The populist policy cycle outlined by Sachs is the most relevant macroeconomic elaboration of this problem. However, it hypothesizes a model with only an export-based and a labour-based sector. In this model, we also assume fixed exchange rates and capital controls. With a monetary expansion, families now have more money, and the interest rates drop. There is now a higher demand for non-tradable goods and consequently higher demand for labour. Consequently, the nominal wages and the prices increase while the exchange rate appreciates. Exports become more expensive and therefore decline. Superficially, this is a good result: in the model now, there are higher wages and less dependence on the export-based sector. As a result of this decision, the trade deficit increases and can only be financed by a loss of foreign exchange reserves or higher foreign debt, which could lead to the devaluation of the currency. If the country exhausts its reserves or borrowing capacity, the exchange rate will collapse and natural resources will become cheaper, leading to a decrease in the value of the local currency. Additionally, wages will be lower than the initial level, and if the government persists in these

policies, the economy will shift to floating exchange rates and an expansionary fiscal policy, resulting in inflation. A black market may also emerge if the government remains steadfast in its decision.

However, a strand of the literature suggests that this “self-destruction” mechanism linked to populist rhetoric could be only possible in the Latin American context. External constraints such as the limited ability of conducting monetary expansions in specific historical cases and different economic cultures might prevent the populist policy cycle to happen also in Europe. While some scholars suggest that populist rhetoric can be beneficial for economic redistribution purposes in European countries (Rodrik, 2018; Mouffe, 2019), there is limited research on the macroeconomic impacts of populism in Europe, with the exception of studies on Brexit (Fetzer and Wang, 2020; Springford, 2022). The populist policy cycle, like expansionary devaluations as a proxy for this phenomenon, has been predominantly viewed as something that only occurs under specific circumstances. As a result, most research since the 1990s focused instead on analysing the supply and demand of populism and the effects of populist rhetoric (Mudde, 2004; Inglehart and Norris, 2016; Rovira Kaltwasser *et al.*, 2017). Today we are also starting to have quantitative works on the consequences of government characterized by populist rhetoric, but their focus is not on specific cases in continental Europe (Fetzer and Wang, 2020; Funke *et al.*, 2020).

This paper expands the quantitative works on the consequences of government characterized by populist rhetoric by looking specifically at the Hungarian case. We first compile some summary figures of leaders characterised by populist rhetoric in Europe, and we elaborate on the European context. Therefore, we undertake a comprehensive quantitative analysis of measuring the effects hypothesized by the influential study on the macroeconomics of populism by Dornbusch and Edwards (Dornbusch and Edwards, 1990). We expand the usual contemporary works in this framework by using Difference-in-Differences and Synthetic Difference-in-Differences alongside the Synthetic Control Method. Our analysis suggests that the Hungarian economy will not quickly self-destruct, but that the economic damage will very likely have some long-term effects and a potentially detrimental effect on the unity of the European Union.

There is no fool proof method for estimating the causal impact of populist leaders on the economy. Causal analysis aims at finding the causal relationship between an intervention and its outcomes. It is a methodology more and more used in the social sciences, because it minimizes the assumptions needed to see the relation between cause and effect. Other methodologies that could have been used in this paper, for example Structural Equation Modelling (SEM), required a considerable number of assumptions regarding latent and unobserved variables. In our analysis, we utilize various causal strategies that complement one another and yield consistent results: populism in Hungary came at a considerable cost. GDP decreased by over 10% over a decade compared to a plausible scenario without populism. Additionally, despite claims of prioritizing the interests of "real Hungarians" over European elites, Hungary's convergence with other European nations did not improve as expected. We have found consistent trends in the data that link the subpar economic results to nationalist and protectionist policies, macroeconomic approaches that are not sustainable, and the erosion of institutions, legal safeguards, and separation of powers.

Parties and leaders are identified as populists thanks to the PopuList database (Rooduijn *et al.*, 2020). The PopuList database is an ambitious project that classifies all parties in Europe since 1989. It currently classifies 213 parties according to Mudde's definition of populism. According to Mudde's definition (Mudde, 2004), populism refers to any rhetorical tool employed by politicians to pit a part of a population against its establishment. Populist leaders are in turn the ones that make this narrative the cornerstone of their platform and assert that they alone represent the interests of the "true people". This narrative puts the "true real people" against an antagonist group often identified with the elite. It divides society into two antagonistic groups. This definition has gained widespread acceptance and is currently used by economists as well (Guriev and Papaioannou, 2020).

According to this definition, a party or a leader can be characterised by populist rhetoric whether it identifies with the left or the right. Using a combination of data between The PopuList and the Chapel Hill Expert Survey (Marks *et al.*, 2019), we find the following stylized facts from the data visualized in Figure 2: (i) populist parties in Europe are on the rise, (ii) populist parties in Europe are predominantly self-identifying as right-wing, (iii) there a considerable number of

parties that can at the same time be considered populist in terms of rhetoric and centrists in terms of self-identification. In the supplementary files, we also include a full list of the parties characterised by populist rhetoric and the relevant ideological stance. We find that this kind of party is predominant in Central and Eastern Europe (Figure 2) and that the Fidesz party is the longest-governing example of this kind (Gomez and Leunig, 2021).

The latter half of the article focuses on determining the economic impact of the Fidesz government in Hungary. In the tradition of Dornbusch and Edwards (Dornbusch and Edwards, 1990), our focus is on a standard measure of economic well-being – GDP at constant local currency unit and parity purchase power. We also study economic divergence, and we look at potential transmission channels in this specific case. The transmission channels are identified via macroeconomic indicators as well as measures of the strengths and balances of an economy. We also look at the role of rhetoric and the political environment in influencing the transmission mechanism.

We then use Difference-in-Difference to look at how the trends diverge. After looking at the different trajectories, we use an innovative Difference-in-Differences technique (2019) to measure the difference in overall trends. We then move to the standard empirical tool for estimating causal effects for macro units, the Synthetic Control Method (SCM), first used by Abadie et. Al (Abadie and Gardeazabal, 2001). With this method, we will construct a synthetic counterfactual Hungary that follows its macroeconomic variables up to 2010, the first election of the Fidesz government. The counterfactual unit predicts the variable of interest from 2010. Based on the validity of the trajectory's construction before 2010 we can then measure the difference between the real Hungary and the synthetic unit. Being the only difference between the real and synthetic units in the election of the Fidesz government, we can say that the difference between the two is given by the overall effects of the policies implemented by this government.

Our evidence points to significant medium- and long-term costs of the Fidesz government in Hungary, even if the evidence for loss of economic convergence towards other European countries is small. A decade following the inauguration of the Fidesz administration, the mean value of per capita real GDP consumption has dropped by around 10 percentage points when

contrasted with a fabricated placebo counterfactual scenario in which the Fidesz government had not come into power. Interestingly, the decline in GDP growth is not that evident in countries with similar trends to Hungary but with different kinds of government (Figure 6).

The negative but not disastrous economic effect of the Fidesz government is interesting to analyse in relation to its electoral success. Upon scrutinizing the transmission channels, the data backs up three possible justifications for this phenomenon. First, an increased role of economic nationalism, particularly disincentivising foreign companies to invest in Hungary. This is in line with the finding that leaders characterised by populist rhetoric are more protectionist no matter if left-wing or right-wing. In the Hungarian context, this is of course cushioned by the European Union environment. However, examples like the tax on banks show how the populist rhetoric influences negatively economic performance via the channel of competitiveness. This goes against the idea of Rodrik (2018): leaders characterised by populist rhetoric usually promise something good but in reality, they fail to deliver it. Likewise, in Hungary, there are indications of macroeconomic policies that are not sustainable, akin to the arguments presented in the original discourse by Dornbusch and Edwards (1991). Of course, there is also a major difference between the European kind of unsustainable macroeconomic policies and the ones typical of Latin America, mainly because of culture and socio-economic context. Thirdly, after the rise of populist leaders, the autonomy of the judiciary and the freedom of the press tend to deteriorate, resulting in a decline in democratic separation of powers. The lack of functioning institutions is linked as well to the lack of diversification and innovation in the Hungarian economy.

This paper belongs to the strand of research that examines the impact of politics and institutions on economic results, following studies that analyse whether the leaders in power have an effect on economic outcomes, such as Blinder and Watson (2016), Jones and Olken (2005), and Snowberg, Wolfers, and Zitzewitz (2006). We are part of this framework by seeing how an example of a leader with populist rhetoric in Central and Eastern Europe affects economic outcomes. The paper also relates to the literature on populism. Specifically, the relationship between populist rhetoric and political outcomes, and the one related to the drivers of populism (Guiso *et al.*, 2017). We also link ourselves to the growing body of literature that

measures the effect of government or episodes linked to populist rhetoric on economic outcomes (Kyle and Gultchin, 2018).

In the rest of the paper, we look at the data as it underpins the rest of the analysis. We then look at the specific context of populist rhetoric in Europe, Central and Eastern Europe, and then Hungary in a top-down approach. We do so for highlighting the differences from the more classic Latin American example and to show why we look at Hungary as a specific case. In this section, we look at data from the Manifesto Project to underpin the theories that populist rhetoric in Central and Eastern Europe influences the transmission channel to economic growth via extensive use of religious and cultural topics. We then look at the data, the methodology, and then the results of the analysis by methodology. We go through Difference-in-Differences, Synthetic Difference-in-Differences, and Synthetic Control before elaborating on the transmission channels and concluding.

## **2. Populist Rhetoric and Economic Performance in Europe and Hungary**

During the period between 1995 and 2020, the European Union reported record economic growth. As it can be shown in Figure 1, the average GDP per capita has been growing steadily and equally across European Union, with the sole exception of Southern Europe. A full list of countries by region included in this analysis can be found in the supplementary files. Nonetheless, this positive picture of economic growth led some economists to discard leaders and parties characterised by populist rhetoric as mere political propaganda based on fears or as leaders trying to address internal or international inequality problems (Rodrik, 2017, 2018).

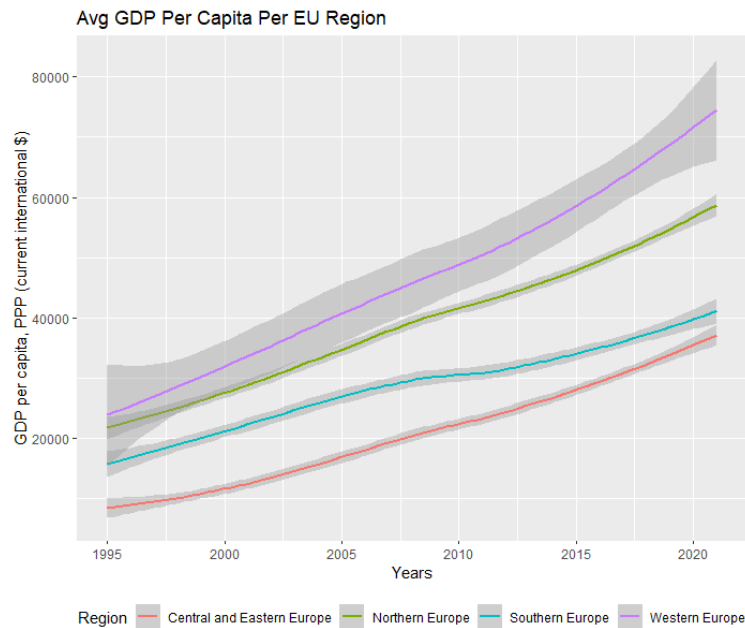


Figure 1. Average GDP per capita per European Union region, 1995-2020. Data sourced from World Bank Open Data, accessed 2 April 2023. <https://data.worldbank.org>.

Populist rhetoric is nonetheless much more than a political style that tends to prosper in Europe despite its overall positive economic performance. If we look at Figure 2, which bring together data from the Chapell Hill Expert Survey and the PopuList, we can see that the number of parties characterized by this kind of rhetoric is growing, especially in Central and Eastern Europe and Southern Europe. Being in proportion to the number of parties characterised by populist rhetoric higher in these two regions, we can say that these two also have a higher chance to be impacted by it. Nonetheless, Central and Eastern Europe has higher numbers of populist parties and specifically right-wing populist parties. This becomes particularly intriguing within the literature framework, given that, in Europe, populism is increasingly propelled by right-wing populists whose discourse typically centres around cultural and religious issues. (Salmela and von Scheve, 2017).



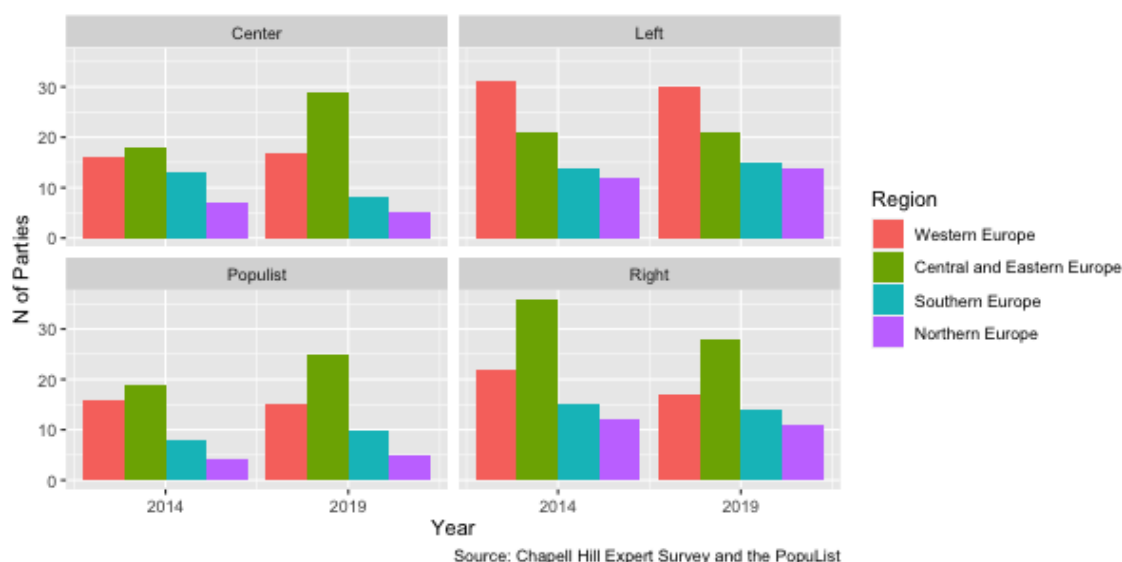


Figure 2. Distribution of Parties in Europe by Political Side and Region in 2014 and 2019. Data sourced from Chapell Hill Expert Survey and the PopuList, accessed 4 April 2023. <https://www.chesdata.eu> and <https://popu-list.org>.

The cultural definition of populism (Ostiguy, 2009) can better help us understand the increased popularity of this populist rhetoric, and especially right-wing populist rhetoric in Central and Eastern Europe, despite its apparent economic prosperity and stability. In Western Europe, a region mainly characterised by liberal democracies and increasing inequality inside countries, populism can be considered a positive phenomenon in terms of redistributive purposes (Kriesi, 2014; Helbling and Jungkunz, 2020). However, the anti-elite rhetoric fails to grasp the inevitability of increasing inequality in liberal democracies given their socioeconomic structure (Fraser, 2019). In Northern Europe, the phenomenon can indeed be associated with xenophobic and nativism sentiments as a reaction to the increased number of migrants (Mjelde and Fredrik Hovden, 2019). In this case, the populist rhetoric fails to see that the lack of reversal of the initial policies is the real problem. The flux of migrants is in fact doomed to increase (Lutz and Scherbov, 2007).

In Southern Europe and Central and Eastern Europe, the populist rhetoric phenomenon can indeed be associated with the lack of economic convergence with other parts of Europe (Figure 1). The reason for this lack of convergence is nonetheless very different from what was

pointed out by the populist rhetoric, which usually points at immigrants and the European Union (Salmela and von Scheve, 2017). Both in Southern Europe and Central and Eastern Europe the literature hypothesizes that the lack of convergence is because of corruption, inefficient investment and excessive bureaucracy (Djankov, Nikolova and Zilinsky, 2016). However, in both these cases, the populist rhetoric tends to reframe the problem in terms of antagonistic groups. While in Southern Europe the populist rhetoric tends to have both prevalently xenophobic and secondly anti-elitist tones, in Central and Eastern Europe is the opposite. The rhetoric is mainly against the foreign oppressor (Lütz and Kranke, 2014). In the Hungarian context, the two antagonistic groups are the real Hungarians versus the European Union (Körösényi and Patkós, 2017).

The Fidesz government is a perfect example of this anti-elite rhetoric that in certain ways echoes the Latin American context. It also exhibits other characteristics frequently associated with populism if we look at it as a radial concept (Weyland, 2001). These include (i) a style of leadership that is personalistic and paternalistic; (ii) an outsider persona; (iii) a propensity to oversimplify intricate issues; (iv) the use of divisive language; (v) a willingness to exploit cultural or economic grievances; (vi) authoritarian tendencies; (vii) an appeal to romanticized notions of nativism and identity; (viii) direct voter outreach through mass media; (ix) clientelism and patronage; and (x) a strong sense of anti-pluralism. These features are identified in previous works by Aslanidis (2016), Guriev and Papaioannou (2020), and Müller (2016).

If we look at the literature, we can see that Europe and anti-European rhetoric is one of the main topics (Alonso-Muñoz and Casero-Ripollés, 2020). This is in line with the idea that populist rhetoric in Central and Eastern Europe and Hungary is used to exacerbate two elements: (i) the lack of convergence between Central and Eastern Europe and the rest of Europe, (ii) the feeling that the European Union is an external immutable authority as the Soviet Bloc was (Učeň, 2007). In this sense populist rhetoric in Hungary is framed in economic terms, like in left-wing populism, and cultural terms, like in right-wing populism. It rallies against globalization and the economic elites hoping for state nationalism like the first ones, and it cultivates anti-outsiders' sentiment like the latter. In this sense, the right-wing appeal of the Fidesz party is mixed with a post-communist legacy that makes this government a particularly interesting and relevant case.

The policy mix the Fidesz government proposes is about state intervention without openness or improving innovation (Szikra, 2014; Batory, 2015; Bartha, Boda and Szikra, 2020). We look at Hungary as an example of how this kind of mechanism, exacerbated via populist rhetoric, can influence GDP. Populist politicians on the right side of the political spectrum generally support economic policies that are liberal, regulatory frameworks that are friendly to businesses, lower tax rates, and a restricted welfare state (Scheuerman and Betz, 1995; Mudde, 2000; Funke *et al.*, 2020). The case of Hungary, despite self-identifying as right-wing, advocates for virtually the opposite. In this sense, it is also interesting to look at Hungary as an example like Latin America but inside the European Union context.

### **3. Data and Methodology**

In this paper, we estimate the cost of the Fidesz government on GDP per capita at purchase power parity in Hungary. To do this, we leverage three complementary methodologies in quasi-experiments that deal with aggregate-level data: Difference-in-Differences, Synthetic Difference-in-Differences, and the Synthetic Control Method. Works of this kind mainly use the Synthetic Control Method only (Nauro F. Campos, Coricelli and Moretti, 2019). In the context of right-wing populists, Funke *et al.* (k2020) estimates that populism has a bad effect on GDP per capita but a moderate one on other macroeconomic indicators. The analysis is, however, silent on the Hungarian case specifically.

#### **3.1. Data**

*The PopuList and The Chapel Hill Expert Survey.* For confirming which party is characterised by populist rhetoric we use The PopuList dataset. This dataset contains information on almost all parties in Europe from 1989. Similarly, we use the Chapell Hill Expert Survey to classify parties in terms of their overall ideological stance.

*World Bank Opendata.* This dataset contains data for 266 countries from 1960 onward. The data contains over one thousand indicators across twenty-one categories that cover all aspects of social and economic development. We use GDP as the main outcome variable. For

the GDP we use GDP per capita, PPP (current international \$) both at the per capita and aggregate national level. As covariates for the construction of the counterfactual unit, we use the following: (i) Consumer Price Index (CPI), (ii) Inflation, consumer prices (annual %), (iii) total labour force, (iv) Current account balance (BoP, current US\$), (v) Debt-to-GDP ratio, (vi) Central government debt, total (current LCU), (vii) Taxes on income, profits and capital gains (% of revenue), (viii) Taxes on goods and services (% of revenue), (ix) Tax revenue (% of GDP), (x) Tax revenue (current LCU), and (xi) households and NPISHs Final consumption expenditure (current US\$). All the variables cover all the time points for all the relevant countries useful for the construction of the donor pool between 1990 and 2020. We chose this timeframe because of the higher reliability of data after 1989 and because 2020 is the latest data point available. On very few occasions, when a value was missing it was inputted using k-nearest neighbour inputting techniques. Each unit must be observed at all times, and all treated units must begin treatment simultaneously.

*Donor Pool Data.* To construct synthetic estimates of the variables mentioned above for Hungary, we use different pools of countries. We consider yearly level data from three donor pools: European Union countries (27 countries), Central and Eastern European countries (22 countries), and countries that have been governed by a party or leader characterised by populist rhetoric between 1990 and 2020 (16 countries). The countries in each donor pool and their categorization are included in the supplementary materials. While the synthetic control method can be performed on a single donor pool (Born et. Al 2019), it is interesting to try different donor pools given the common trends assumptions to see which one performs better. In our case, it is the one using the twenty-two Central and Eastern European countries, which minimizes the root mean square projection error.

## **3.2. Methodology**

### **3.2.1. Difference-in-Differences**

The Difference-in-Differences method (DiD) is a quasi-experimental technique first introduced in 1990 (Moulton 1990). In social sciences, it is often referred to as a controlled before-after study. It entails comparing the outcome of two groups over two different time points.

If we can assume the two groups should have parallel trends, then the difference at T1 from T0 in our treated group can be considered an effect of the intervention.

$$e_1 = (\hat{T}_1 - \hat{T}_0) - (\hat{U}_1 - \hat{U}_0)$$

The overall effect  $e_1$  at different time points is calculated by the following regression model. In the model,  $y$  is the variable of interest,  $d2$  is a dummy variable with a value of 0 in the pre-intervention period and 1 in the intervention period, and  $dB$  is a dummy variable with a value of 1 for treated cases and 0 for non-treated cases. The values  $\beta_0$ ,  $\beta_1$  and  $u$  are the coefficients and the coefficient of the interactions between  $d2$  and  $dB$ , which represents the treated cases under treatment.

$$y = \beta_0 + \beta_1 dB + e_0 \delta d2 + e_1 d2 dB + u$$

The Difference-in-Differences estimation rests on three assumptions: (i) parallel trends of the compared groups, (ii) the composition of the comparison group is stable, (iii) the amount of treatment is not determined by the outcome, and (iv) there is no spillover effect. We try to overcome these assumptions by using a Difference-in-Differences model that uses the average of the control group to see the difference in trends.

### 3.2.2. Synthetic Difference-in-Differences

The Synthetic Difference-in-Differences is a methodology created by Arkhangelsky *et al.* (2019) to evaluate the effect of policy changes using panel data. The method uses the same Synthetic Control assumption of weighting and pairing non-treated trends to create a comparison group. However, it differs from Synthetic Control as it is invariant to additive unit-level shifts like the Difference-in-Differences.

$$Y_{it} = L_{it} + \tau_{it} W_{it} + \varepsilon_{it}$$

For our panel data, we observe matrices of outcomes following the formula above. In the formula  $Y_{it}$  is the outcome for each unit  $i$  at time  $t$ ,  $L_{it}$  is the systematic component,  $\tau_{it}$  is the effect of treatment on the unit  $i$  at time  $t$ ,  $W_{it}$  is the assignment matrix, and  $\varepsilon_{it}$  is the noise. We estimate the average treatment effect for each  $i$  and where it happens ( $e_{it}$ ), so  $e_{it} = \frac{\widehat{\tau}_{it}}{i}$  for each  $W_{it} = 1$ .

### 3.2.3. *Synthetic Control Method*

The Synthetic Control Method is a widely used methodology to estimate causal inference of policies on macro units (Cerulli, 2019; Abadie, 2021). In our model, we use the start year of the election of the Fidesz government as starting time of the treatment for the statistical analysis. Our analysis centers on outcomes in the medium and long term, specifically using a timeframe of 10 years following the "treatment". For the pre-intervention period, we use all the data available from the World Bank Opendata, which covers the years as well 1990-2010.

For the empirical strategies, two main steps are involved. First, we need to select the variables related to populist rhetoric that affect GDP and consumption. Like other studies using synthetic control, we use regression analysis and statistical associations based on the literature to select our variables. Our empirical tool will be the Synthetic Control Method based on the Abadie 2001 study and subsequently implemented by Abadie *et al.* (Abadie and Gardeazabal, 2001).

The Synthetic Control Method uses an algorithm that minimizes the distance between observed and simulated trends between the real and the counterfactual unit. The minimal distance is calculated by the following formula, which calculates the effect of a certain intervention ( $e$ ) for a certain country  $i$  at the time  $t$  (or  $e_{it}$ ). The effect equals to the difference between the treatment group ( $Y_{it}^I$ ) and the control group ( $Y_{it}^C$ ). The effect must be calculated for any moment before the intervention or event ( $t \leq T_0$ ), as shown in Equation 1:

$$e_{it} = Y_{it}^I - Y_{it}^C \text{ for all } t \leq T_0$$

This means the algorithm computes  $e_{it}$  so that it equals to 0 for each  $t \leq T_0$ . For each  $t \geq T_0$  the algorithm computes  $e_{it}$  only based on the previous results. This way it shows the difference between the real unit and the one where the intervention did not happen. The estimation of the counterfactual unit  $Y_{it}^C$  is made so that for each  $t \leq T_0$   $e_{it}$  equals to zero. This is how the weights are chosen. The choice of the weights to measure the effects lays in the estimation of  $\widehat{Y}_{it}^C$ , as shown in the following equation. In this equation,  $N + 1$  represents the number of countries where the party in question characterised by populist rhetoric was not elected. This group of countries is also referred to as the "donor pool" (Nauro F Campos, Coricelli and Moretti, 2019).

$w_i^*$  is the combination of optimal weights for a certain country  $i$ , and  $Y_{it}$  is the outcome for a certain country  $i$  at time  $t$ .

$$\widehat{Y}_{it}^C = \sum_{i=2}^{N+1} w_i^* Y_{it}$$

The choice of the right  $w_i^*$ , or optimal combination of weights, is data driven by the algorithm. The only input that can be given is the number of countries that the algorithm takes into consideration. For this paper, we use different samples for the donor pool: (i) one including only European Union countries, (ii) one including only countries in Central and Eastern Europe, (iii) one with countries that were led by a leader characterised by populist rhetoric between 2010 and 2020. We find that the model that performs better is the one only in Central and Eastern European countries. We also append a list of the countries involved in the supplementary files. The choice of the pools is based on the consensus in the Synthetic Control literature that a choice of countries with similar underlying dynamics can better consider exogenous trends that affect the treated unit (Abadie, 2021).

#### 4. Analysis

The Synthetic Control Method is the most common quasi-experimental methodology to measure the macroeconomic effect of one or multiple policies. In this context it allows us to quantify the economic effects of a government characterised by populist rhetoric compared to a single computationally created duplicate economy. The idea behind this methodology is that the synthetic unit predicts the dependent variable in the same way as the real unit until the start of the treatment period. In this scenario, the treatment period starts when the government characterised by populist rhetoric gets elected. The synthetic unit is constructed by an algorithm that determines a combination of economies that mimics the trend of the real economy. We also complement this methodology with Difference-in-Difference and the Synthetic Difference-in-Differences. We use the first because of its widespread use in the social sciences and because it is the conceptual basis for the other two methodologies. We use Synthetic Difference-in-Differences because it is the new improved version of the Synthetic Control Method and as a

robustness check. We also use Mahalanobis matching and Regression Discontinuity Design as a second set of sensitivity checks.

The main findings of this analysis are illustrated in Figure 3, where we observe that the path of average GDP per capita after the Fidesz government took office (indicated by the blue line) is significantly below that of a synthetic replica where a political party identified by populist discourse did not assume power (indicated by the red line). The cumulative difference is large for all the countries considered. The cumulative difference is approximately 10% point. In this case, the counterfactual starts diverging significantly after three years from the elections as well as for the Synthetic Difference-in-Differences estimation. An economic performance which is already far from convergence as shown in Figure 1 deteriorates further in line with the literature (Funke, Schularick and Trebesch, 2016).

The estimates for each methodology are shown in Table 1, showing consistency across the three methodologies employed and a loss in GDP between -8.31% and -10.04%. We use the Difference-in-Differences, the Synthetic Difference-in-Difference estimator, and the Synthetic Control estimators for the average treatment effect in panel data, as proposed in Arkhangelsky *et al.* (2019). A dummy variable is created to take a value of 1 during the five-year period following the initial year of a populist episode, and 0 during any other time. We use a panel of twenty-two European Union countries in Central and Eastern Europe since 1990. The variable we are measuring is GDP, expressed in US Dollars at a constant value. Figure 3 shows a difference between the trends of the real and the constructed units within a 95% confidence interval. The different slope displays the percentage point gap in the dependent variables after the Fidesz government took power in a Synthetic Difference-in-Differences setup. In all specifications, the gaps per year are highly significant.

**Table 1. Estimates of the Cost of the Fidesz Government on GDP, 2010-2020**

	Difference-in-Differences	Synthetic Control	Synthetic Difference-in-Differences
US\$ at Current Prices Difference	-32647832792	-34140931461	-28493539079
Percentage Difference	-9.58%	-10.04%	-8.31%



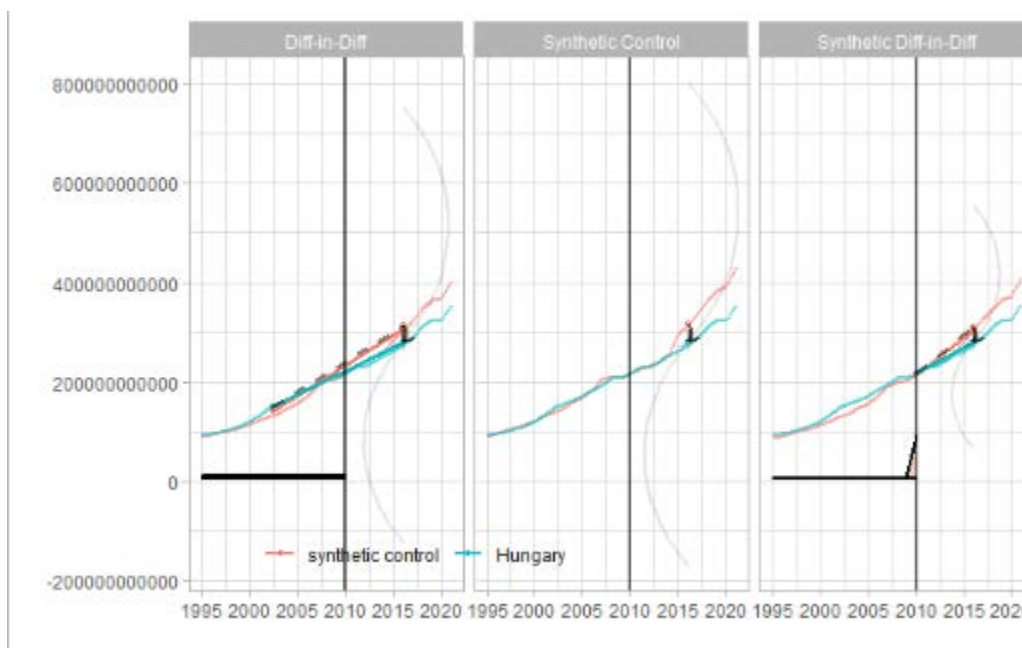


Figure 1. The Cost of the Fidesz Government on GDP (vertical axis), 2010-2020 (horizontal axis). Data sourced from World Bank Open Data, accessed 2 April 2023. <https://data.worldbank.org>

These estimates are based on the reiteration of the same model using different countries for the donor pool. In different iterations of the model, we used European Union countries, Central and Eastern European countries, and countries led by a government characterized by populist rhetoric as donor pool countries. The best-performing model includes a combination of these countries, as shown in Figure 4. A detailed composition by the percentage of the donor pool is also included in the supplementary materials. It is also a positive element to see that the pool of countries is balanced.

In each case, the algorithm by Arkhangelsky *et al.* (2019) compares yearly data from the different pools of countries. A subset of countries is chosen by the model, and each of them is assigned a weight to construct a group of nations that minimizes the gap between their data and that of Hungary. The algorithm matches the GDP value at each time point, and in this way, it creates a duplicate synthetic economy whose GDP is most similar to Hungary in terms of value and trend. However, it would make no sense to compare Hungary directly to the countries of the donor pool as they have different dynamics and characteristics.

These methodologies are also better than a before-after comparison, as we are very unlikely to see big changes right after 2010 and we are more likely to see changes in the medium term. This is for example well represented in Figure 3, where the reduction in GDP happens around 2015, which is both the medium term in the analysis and when the Fidesz populist rhetoric intensified with the stars of its second mandate (Ágh, 2016; Csehi, 2019). The replication of the trend around the 2019 period also suggests to us that the shortfall is due to the government in charge rather than the pandemic.

**Figure 4. Composition of the Donor Pool to Construct the Synthetic Hungary**

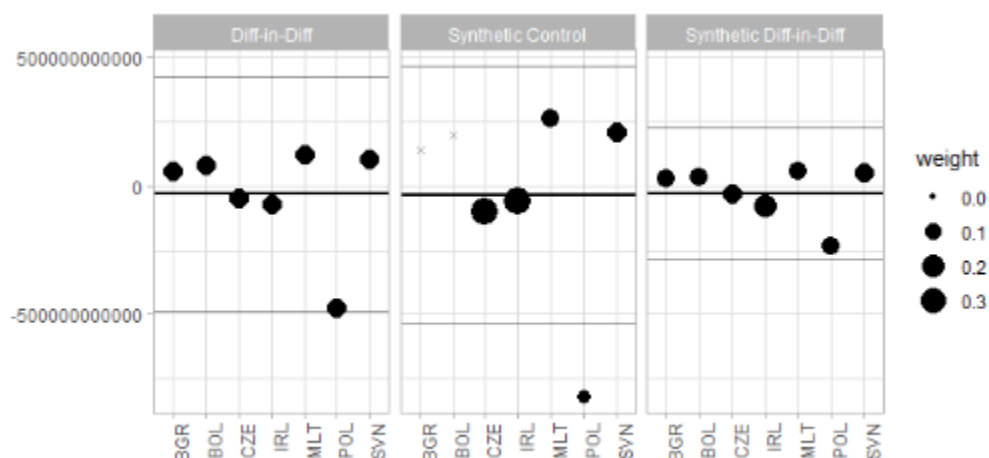


Figure 2. Composition of the Donor Pool to Construct the Synthetic Hungary. Data sourced from World Bank Open Data, accessed 2 April 2023. <https://data.worldbank.org>.

One of the main criticisms that this analysis received is proving that a change of government is equivalent to the implementation of a series of policies. To overcome this criticism, we use a Regression Discontinuity Design (RDD) to prove the comparison between the two. Regression Discontinuity Design is often used to measure the overall effect of a temporal threshold (Lee and Lemieux, 2010). In this case, we put the threshold in 2010, the election of the Fidesz government, and we look at the overall difference in GDP growth before and after this threshold. We also use Mahalanobis matching to see whether countries with similar macroeconomic indicators to Hungary and therefore a similar economic performance are

characterised by populist rhetoric. We use Mahalanobis matching as it is a matching technique able to pair observations by not looking at the absolute distance between them but rather their Euclidean distance (Rubin, 1980). With this methodology, we can look at the overall more similar countries to Hungary based on the variables listed in the supplementary materials. We find that the countries more similar to Hungary in terms of macroeconomic indicators have all been experiencing populist rhetoric between 1995 and 2020. Furthermore, in Table 2 we show how the coefficient of the variable ‘centred\_years’ is the average treatment effect. On average, the GDP growth for Hungary is slightly lower than the average years before the election of the Fidesz government. A graphical representation of this trend is also present in the supplementary files. The result is overall consistent with the result of the previous section.

**Table 2. Regression Discontinuity Design Coefficients**

	Coefficients	Standard Error	t Stat	P-Value
(Intercept)	26127745	0.021557	1212.03	< 0.0000000000000002 ***
pop_years	-0.104162	0.035191	-2.96	0.00682 **
centred_years	-0.056591	0.002245	25.21	<0.0000000000000002 ***

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.04617 on 24 degrees of freedom

Multiple R-squared: 0.9881, Adjusted R-squared: 0.9871

F-statistic: 998.4 on 2 and 24 DF, p-value: < 0.00000000000000022

## 5. Transmission Channels

The starting point of our analysis is looking at the GDP differentials between Hungary and the most similar countries in the European Union based on the selection pools highlighted in the previous section. To do this we variables based on the literature (Funke *et al.*, 2020). Figure 3 shows that Hungary underperformed since the election of the Fidesz government in 2010. In this section, we look at which indicators usually connected to GDP growth had different trends in Hungary compared to the average in Central and Eastern Europe. Figure 6 shows that Hungary underperformed in comparison to other European countries and regional European averages.

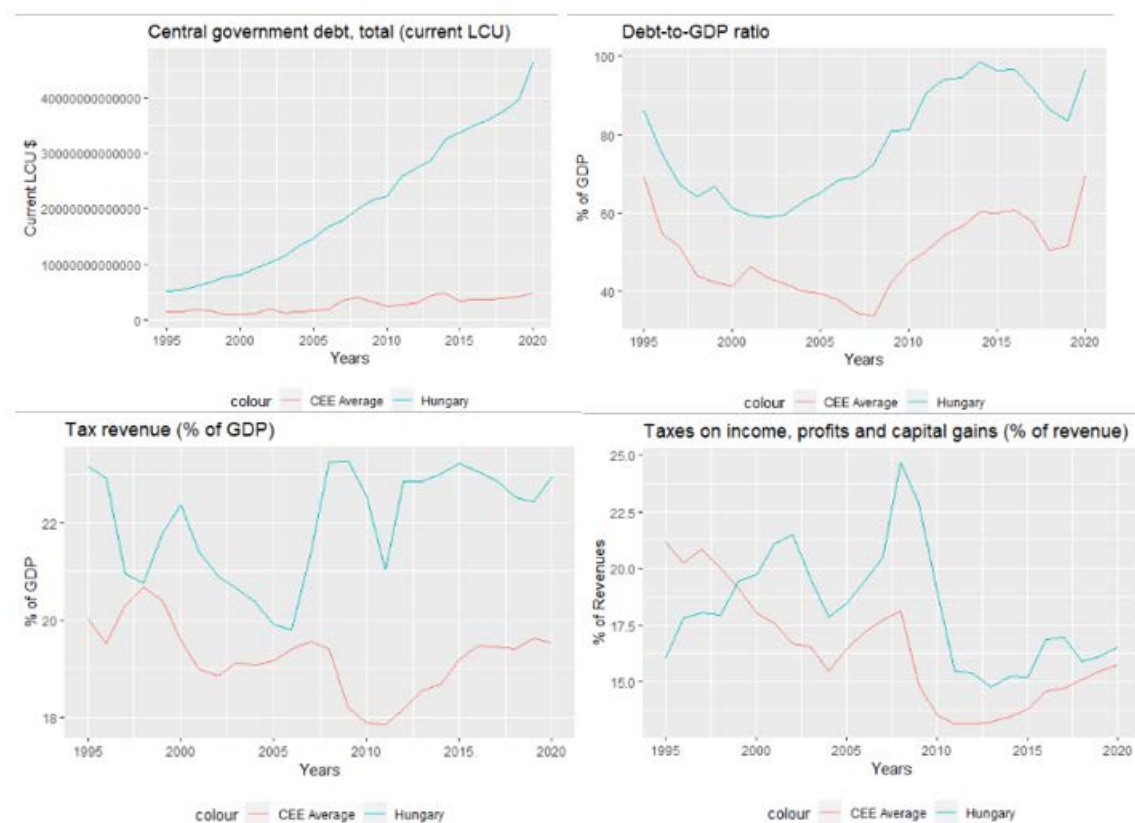


Figure 3. Hungary Vs CEE Average for Selected Macroeconomic Variables. Data sourced from World Bank Open Data, accessed 2 April 2023. <https://data.worldbank.org>.

The negative but not disastrous economic effect of the Fidesz government is interesting to analyse in relation to its electoral success. Looking at the data, we can hypothesize three transmission channels. First, an increased role of economic nationalism, particularly disincentivising foreign companies to invest in Hungary. This is in line with the finding that leaders characterised by populist rhetoric are more protectionist no matter if left-wing or right-wing. In the Hungarian context, this is of course cushioned by the European Union environment. However, examples like the tax on banks show how the populist rhetoric influences negatively economic performance via the channel of competitiveness. This goes against the idea of Rodrik (2018): leaders characterised by populist rhetoric usually promise something good but, in reality, they fail to deliver it. Additionally, in Hungary, there are indications of unviable macroeconomic strategies (Toplišek, 2019), as previously debated by Dornbusch and Edwards (1991). Of course,

there is also a major difference between the European kind of unsustainable macroeconomic policies and the ones typical of Latin America, mainly because of culture and socio-economic context. Third, the division of powers declined, and often, the independence of the judiciary and press freedom also decreased in recent years. The lack of functioning institutions is linked as well to the lack of diversification and innovation in the Hungarian economy.

## 6. Conclusion

This study examined the economic growth experience of Hungary in relation to its politics. Unlike the previous studies, we account for data between 1990 and 2020 for Hungary specifically. We depart from much of the existing literature by utilizing a combination of quasi-experimental techniques such as the Synthetic Control, Difference-in-Differences, and Synthetic Difference-in-Differences. We also use Mahalanobis Matching and Regression Discontinuity Design as sensitivity checks. The ensemble of these techniques enables us to reject the null hypothesis and to work around some of the potential limitations of each individual methodology. The Synthetic Control Method and the Synthetic Difference-in-Differences help us see the overall macroeconomic effect of the Fidesz government on economic performance. The Mahalanobis Matching and the Regression Discontinuity Design help us select similar countries and confirm our results. This way we can also account for the main critique of the Synthetic Control Method, which is the choice of countries and variables to create the counterfactual unit. The paper provides a detailed presentation of the results, while this section highlights the main conclusions drawn from the analysis.

The combined GDP dynamics following the ascent to power of a leader characterized by populist rhetoric under different models are plotted in Figure 3. These models allow us to control for endogeneity. The results and the projections in Table 1 show us that GDP in Hungary declines under a government with this kind of rhetoric. More interestingly, we can see that the decline is minimal during the first years after the elections, which is the same duration of a political term. Yet the negative effects become more visible over time. This means 'doubling down' in populist rhetoric to justify the negative effects creating a vicious circle when such leaders manage to get

re-elected. The only difference between the countries analysed is that the difference is lower for the countries part of the European Union, as they are less prone to exogenous shocks.

First, the Mahalanobis Matching, which helps us choose the most similar countries to Hungary given the variables that are relevant for growth, provides some important insights into the growth trajectory of a specific group of countries. We find that countries with similar trends for the macroeconomic variables analysed also experienced some form of populist rhetoric. Second, the Regression Discontinuity Design finds an important role in political choices on economic performance. The GDP growth of Hungary has been slightly lower even without using the construction of a counterfactual unit or the use of other countries as a comparison.

Our Synthetic Control results strongly support the growing consensus that a government characterised by populist rhetoric has an overall negative effect on economic performance. This is not only in Latin America but as well in Europe. Based on our 30-year sample, we find that a government characterised by populism in Hungary is characterised by a loss in GDP between 8.31% and 10.14%. This is also in line with the Sachs policy cycle idea that populist rhetoric first have a positive effect and then a negative one in the long-term. The difference between what we can see in Latin America and Hungary is the difference in intensity and a longer time-span.

In the future we will also consider the following potential extensions to our research. First, the Synthetic Control Method could be expanded with a regional analysis of other countries in Central and Eastern Europe. Second, the validity of the data should be further assessed, and the analysis replicated with different sources. For example, whether the same government configuration also influences regional growth and what internal dynamics create such an effect on a local scale. Third, the analysis should be extended to other macroeconomic indicators. Fourth, micro-level data seeing whether we can see the same trends on a lower level should be assessed. Special attention should be put on whether Foreign Direct Investments (FDIs) have been consistent during the 2010-2020 period, especially in comparison with other economies from Central and Eastern Europe. Last, it would be interesting to replicate the same study both for Poland and Hungary. The first one because it is also characterised by populist rhetoric, and the second one to see the overall effect of the Romanian government on macroeconomic performance.

In the last part of this paper, we also hypothesize some transmission channels for these effects. Different from the Sachs model, Hungary has flexible exchange rates and no capital controls. Within this context, Hungary is currently attracting foreign investments via its competitive nominal wages, given that the exchange rate is advantageous and constantly depreciates from other currencies such as the Euro. However, economic growth via investments in cheap nominal wages is not sustainable in the long run. A way to ignite sustainable economic growth would be truly sustained economic growth should happen by addressing some of the country's internal problems such as cronyism and promoting intensive growth instead of extensive growth (Gylfason and Hochreiter, 2009). A constant use of expansive monetary policies does the opposite to address this problem. It creates further inflation making Hungary even more dependent on labour-intensive foreign investment. In other words, we can see that the nominal wages and the prices decrease while the exchange rate depreciates. This, in turn, is very likely to create even more discontent towards the European Union and 'the West', creating even more propensity for strong centralized leadership with a preference for populist rhetoric. Not addressing the above-average public spending without effective investments will on the other hand further promote cronyism in the country. What we can see in Hungary and with our analysis is a negative slow detriment of the Hungarian economy that will very likely not change if the current conditions are maintained.

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## 9. Supplementary files

**Table 2. Countries in the Different Pools for Selecting the Different Counterfactual Units**

Code	Name	European Region	European Union	Populist Rhetoric
AUT	Austria	Western Europe	Yes	No
BEL	Belgium	Western Europe	Yes	No
BGR	Bulgaria	Central and Eastern Europe	Yes	Yes
HRV	Croatia	Central and Eastern Europe	Yes	No
CYP	Cyprus	Southern Europe	Yes	No
CZE	Czech Republic	Central and Eastern Europe	Yes	No
DNK	Denmark	Northern Europe	Yes	No
EST	Estonia	Central and Eastern Europe	Yes	No
FIN	Finland	Northern Europe	Yes	No
FRA	France	Western Europe	Yes	No
DEU	Germany	Western Europe	Yes	No
GRC	Greece	Southern Europe	Yes	Yes
HUN	Hungary	Central and Eastern Europe	Yes	Yes
IRL	Ireland	Western Europe	Yes	No
ITA	Italy	Southern Europe	Yes	Yes
LVA	Latvia	Central and Eastern Europe	Yes	No
LTU	Lithuania	Central and Eastern Europe	Yes	No
LUX	Luxembourg	Western Europe	Yes	No

MLT	Malta	Central and Eastern Europe	Yes	No
NLD	Netherlands	Western Europe	Yes	No
POL	Poland	Central and Eastern Europe	Yes	Yes
PRT	Portugal	Southern Europe	Yes	No
ROM	Romania	Central and Eastern Europe	Yes	Yes
SVK	Slovak Republic	Central and Eastern Europe	Yes	No
SVN	Slovenia	Central and Eastern Europe	Yes	No
ESP	Spain	Southern Europe	Yes	No
SWE	Sweden	Northern Europe	Yes	No
ARG	Argentina	Not Applicable	No	Yes
	Bolivia			
	(Plurinational			
BOL	State of)	Not Applicable	No	Yes
BRA	Brazil	Not Applicable	No	Yes
ECU	Ecuador	Not Applicable	No	Yes
IND	India	Not Applicable	No	Yes
IDN	Hungary	Not Applicable	No	Yes
ISR	Israel	Not Applicable	No	Yes
JPN	Japan	Not Applicable	No	Yes
MEX	Mexico	Not Applicable	No	Yes
PER	Peru	Not Applicable	No	Yes
PHL	Philippines	Not Applicable	No	Yes
ZAF	South Africa	Not Applicable	No	Yes
TWN	Taiwan	Not Applicable	No	Yes
TUR	Turkey	Not Applicable	No	Yes
	United States of			
USA	America	Not Applicable	No	Yes
	Venezuela			
	(Bolivarian			
VEN	Republic of)	Not Applicable	No	Yes

**Table 3. Variables Used, Definition, and Source**

Variable	Definition	Source
NY.GDP.MKTP.PP.CD	GDP, PPP (current international \$)	World Bank Opendata
pop	Population	World Bank Opendata

FP.CPI.TOTL	consumer price index (2010 = 100)	World Bank Opendata
FP.CPI.TOTL.ZG	inflation, consumer prices (annual %)	World Bank Opendata
SL.TLF.TOTL.IN	Labor force, total	World Bank Opendata
BN.CAB.XOKA.CD	Current account balance (BoP, current US\$)	World Bank Opendata
GC.DOD.TOTL.GD.ZS	Central government debt, total (% of GDP)	World Bank Opendata
GC.TAX.GSRV.RV.ZS	Taxes on goods and services (% of revenue)	World Bank Opendata
GC.TAX.TOTL.GD.ZS	Tax revenue (% of GDP)	World Bank Opendata

**Table 4. List of Pool Countries with Percentages**

	Diff-in-Diff	Synthetic Control	Synthetic Diff-in-Diff
BGR	0.14	0.00	0.12
BOL	0.14	0.00	0.13
CZE	0.14	0.34	0.14
IRL	0.14	0.35	0.22
MLT	0.14	0.11	0.13
POL	0.14	0.05	0.12
SVN	0.14	0.16	0.14

**Table 5. Summary of Balance for All Data**

	Means Treated	Means Control	Std. Diff.	Var. Ratio	eCDF Mean	eCDF Max
	2.045.633.333.333.33	28.595.747.605.532.00				
NY.GDP.MKTP.PP.CD	0	0	-340.221	0.0001	0.2374	0.5381
pop	10.000	0.0679	37.113	.	0.9321	0.9321
FP.CPI.TOTL	866.640	1.117.780	-0.8417	0.0040	0.0782	0.1722
FP.CPI.TOTL.ZG	69.918	80.078	-0.1481	0.0115	0.1029	0.2506
			-			
			4.755.10			
SL.TLF.TOTL.IN	43.730.688.519	1.216.790.136.443	6	0.0000	0.2501	0.4903
BN.CAB.XOKA.CD	-25.970.666.666.667	62.294.029.795.209	-18.664	0.0068	0.1992	0.4566
GC.DOD.TOTL.GD.ZS	782.381	512.832	19.607	0.3258	0.3045	0.7493
GC.TAX.GSRV.RV.ZS	349.532	303.963	15.446	0.1097	0.2132	0.5631
GC.TAX.TOTL.GD.ZS	216.257	141.693	32.495	0.1474	0.4237	0.8154

**Table 6. Summary of Balance for Matched Data**

	Means Treated	Means Control	Std.			
			Mean Diff.	Var. Ratio	eCDF Mean	eCDF Max
NY.GDP.MKTP.PP.CD	2.045.633.333.333.330	2.785.077.777.777.770	-0.9475	0.0860	0.0362	0.2593
pop	10.000	10.000	0.0000	.	0.0000	0.0000
FP.CPI.TOTL	866.640	834.434	0.1079	18.142	0.0805	0.2222
FP.CPI.TOTL.ZG	69.918	42.310	0.4025	25.488	0.1469	0.4074
SL.TLF.TOTL.IN	43.730.688.519	68.850.845.185	-101.827	0.0014	0.0789	0.5926
BN.CAB.XOKA.CD	-25.970.666.666.667	1.696.884.273.704	-0.5850	0.3464	0.0964	0.2222
GC.DOD.TOTL.GD.ZS	782.381	774.043	0.0607	0.5805	0.0352	0.1852
GC.TAX.GSRV.RV.ZS	349.532	332.246	0.5859	13.000	0.0810	0.3704
GC.TAX.TOTL.GD.ZS	216.257	209.227	0.3064	0.5549	0.0624	0.3704

**Table 7. Standard Pair Distance Between Matches**

	Std. Pair Distance
NY.GDP.MKTP.PP.CD	20.730
pop	0.0000
FP.CPI.TOTL	0.8937
FP.CPI.TOTL.ZG	0.7691
SL.TLF.TOTL.IN	160.552
BN.CAB.XOKA.CD	13.436
GC.DOD.TOTL.GD.ZS	0.3927
GC.TAX.GSRV.RV.ZS	0.7957
GC.TAX.TOTL.GD.ZS	0.7265

**Table 8. Matches Sample Sizes**

	Control	Treated
All	7155	27
Matched	27	27
Unmatched	7128	0
	135	

Discarded                      0                      0

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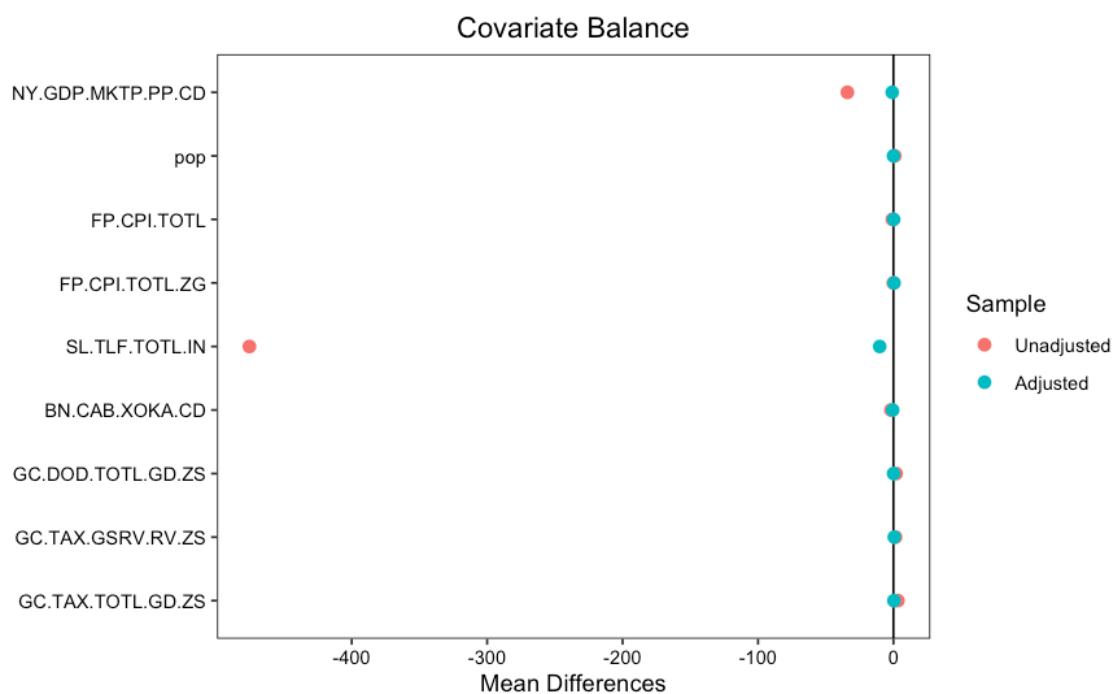


Figure 4. Covariate Balance

Table 9. Full List of Matches

Matches Pairs	Country	Year
1	HUN	1995
1	ISR	1999
2	HUN	1996
2	ISR	2006
3	HUN	1997
3	SVK	2018
4	HUN	1998
4	SVK	2019
5	HUN	1999
5	BGR	2000
6	HUN	2000
6	ZAF	2005



7	HUN	2001
7	ZAF	2002
8	HUN	2002
8	ZAF	2003
9	HUN	2003
9	ZAF	2004
10	HUN	2004
10	BGR	1998
11	HUN	2005
11	BGR	2001
12	HUN	2006
12	BGR	1999
13	HUN	2007
13	SVK	2017
14	HUN	2008
14	ISR	2005
15	HUN	2009
15	ISR	2003
16	HUN	2010
16	ISR	2010
17	HUN	2011
17	POL	2020
18	HUN	2012
18	GRC	1996
19	HUN	2013
19	GRC	1998
20	HUN	2014
20	GRC	1999
21	HUN	2015
21	ISR	2004
22	HUN	2016
22	ISR	2020
23	HUN	2017
23	ISR	2012
24	HUN	2018

24	ISR	2013
25	HUN	2019
25	SVK	2020
26	HUN	2020
26	GRC	1995
27	HUN	2021
27	TUR	2005

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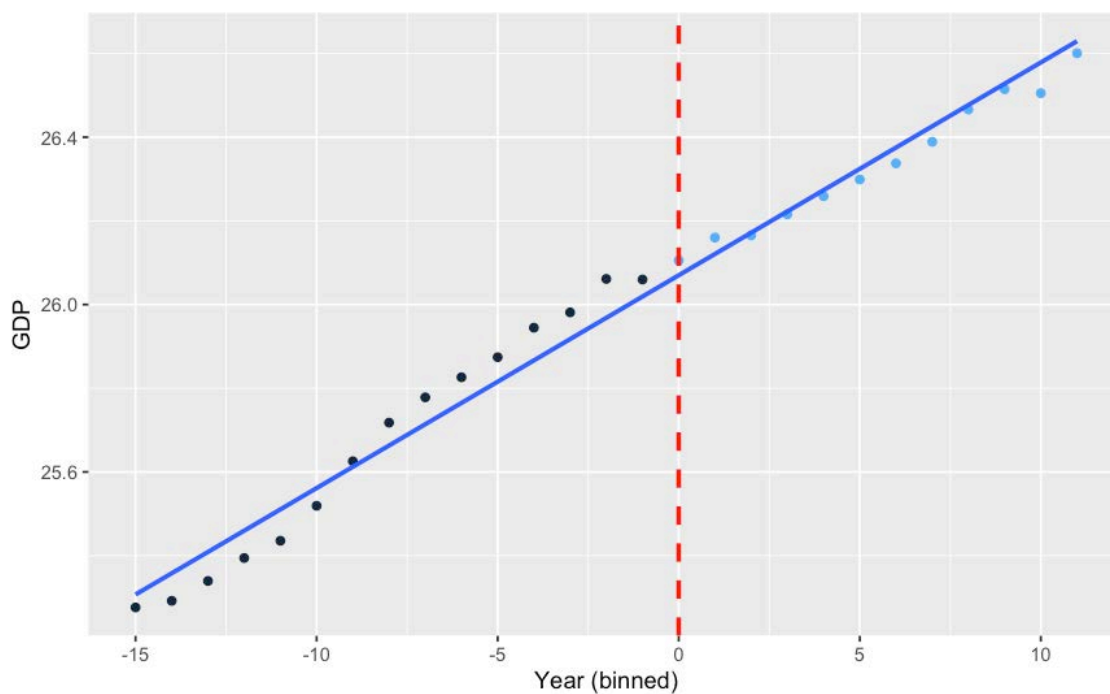


Figure 5. Regression Discontinuity Design Visual Representation