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CONTENTS

Synthetic 'real socialism': a counterfactual analysis of political and economic liberalizations[1]

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Abstract: We evaluate the effect of the 1989 shock over economic development in four Eastern European countries. We apply a counterfactual approach and define the shock alternatively as the trigger for economic openness, political competition, or both. The main result is an effect of economic freedom larger than the one of democratization. In Poland and Bulgaria we find a positive impact of economic freedom, whilst in Bulgaria there is also a smaller effect of democratization. In Albania, after an initial recession, economic freedom helps recovery. Finally Romania does not show any robust effect.

Keywords: economics of transition, synthetic control estimator, democratization, economic freedom.

JEL codes: C21, C23, O11, O43, P27.

Introduction

The fall of the Berlin Wall in November 1989 was the final stage of the Soviet Union domination over Eastern Europe and the consequent loss of influence over those countries. The set of reforms that followed determined a transition path from a centrally-planned to a market economy and a simultaneous switch from dictatorship to democracy. The transition represented a season of deep institutional change whose costs sometimes outweighed the benefits. All Eastern European countries experienced an initial output fall which has been more or less dramatic, more or less long-lasting, according to each country's specificities. Two decades after 1989 disparities between countries still remain.

Our research question is the following: given that the transition affected both economic and political aspects, which was the most responsible for the

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initial fall and subsequent upsurge in output? That is, which of these freedoms is more important in shaping economic outcomes? Transition countries seem very good candidates to answer these questions given the unique "natural experiment"[3] they have been subjected to.

To address these issues we apply a counterfactual approach, the synthetic control estimator [Abadie and Gardeazabal 2003; Abadie, Diamond and Hainmueller 2010, 2014], which is best suited to address quasi-experimental data. This methodology provides data-driven comparative case studies. The synthetic control accounts for the presence of a time-varying impact of country unobservable characteristics and therefore overcomes a major drawback of more standard estimators. The advantage of this approach is the transparent construction of the counterfactual outcome of the treated country, that is, a linear combination of untreated countries. The comparison countries that form the synthetic control (and their relative weights) are selected based on their similarity to the treated country before the treatment takes place, both with respect to past realizations of the outcome and the standard explanatory variables used in the growth literature.

The simultaneity between democratization and liberalization makes our treatment a bi-dimensional one. Therefore, the choice of the donor pool is crucial. If we argue that the fall of the Berlin Wall triggered growth through the democratization of Eastern European countries we should select only the pool of non-democratic countries as donors. Similarly, if we believe that the Berlin Wall stimulated growth through the transition to market economy, we should select only countries that did not implement any economic reform. Therefore we perform three experiments: one in which the donor pool is made of countries that did not experience democratization (we call the *non-politically free*), one with the countries that did not go through economic liberalization (*non-economically free*) and finally a donor pool that included countries that neither implemented political nor economic liberalization (*non-free*).

The paper is organized as follows. Section 2 reviews the literature on economic transitions in Eastern European countries. Section 3 presents the methodology and the data we use, whereas results are discussed in Section 4. Conclusions are drawn in Section 5.

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[3] A natural experiment is an empirical study in which individuals (or clusters of individuals) exposed to the experimental and control conditions are determined by nature or by other factors outside the control of the investigators. Thus natural experiments are observational studies and are not controlled in the traditional sense of a randomized experiment. Natural experiments are most useful when there has been a clearly defined exposure involving a well-defined subpopulation (and the absence of exposure in a similar subpopulation) such that changes in outcomes may be plausibly attributed to the exposure. In this sense the difference between a natural experiment and a non-experimental observational study is that the former includes a comparison of conditions that pave the way for causal inference, while the latter does not [Dunning 2012].

1. Literature

This paper is related to more than one strand of the literature drawing insights from the economics of transition and the political economics that explain the role of both economic and political competition on growth.

The economics of transition has as its main object the study of the formerly socialist countries after 1989. This region, albeit geographically well-defined by a number of contiguous states in Eastern Europe and Central Asia, is extremely heterogeneous. Scholars distinguish five main clusters: Central-Eastern European countries (CEEC), Baltic Republics, South-Eastern European Countries (SEEC), Yugoslavia and the Commonwealth of Independent States (CIS). For the purpose of this work the argumentation will focus on CEEC's (Slovenia, Poland, Hungary and the Czech Republic) and SEEC's (Bulgaria and Romania). Albania does not fit into any category, having the poor income level of some CIS countries and the degree of exposure to Western Europe comparable to Yugoslavia and CEEC's [Myant and Drahokoupil 2011: xviii].

The attention of scholars to transition economies derives from the uniqueness of the natural experiment provided by the end of the monopolistic political power of the Communist Party. This shock led to political freedom which in turn was followed by economic freedom. The sequence of the two transitions, however, is blurred by the internal country dynamics. As an example, reforms in Hungary started in 1968 with the launch of the New Economic Mechanism (NEM), that is far before the political *status quo* was questioned. In Poland, before being advised by the IMF in the 1990's,[4] an attempt to move away from central planning was made in the 1980's, with the generation of severe fiscal imbalances. Interestingly, the negative social impact of the deregulation of prices in Poland was mitigated by the opposition of the *Solidarność* union which obtained wage indexation. This aspect makes another link between democratization and economic price liberalization.

From the economic perspective the literature usually refers to the two main strategies adopted by those countries as "big-bang" and "gradualism" [Dewatripont and Roland 1993]. They differ according to the speed of the reforming process, and they are supported or criticized on the basis of uncertainty concerns [Dewatripont and Roland 1995]. Interestingly, Marangos [2004] argues that the shock therapy was inconsistent with a democratic process of decision-making and that those governments established after 1989 opted for gradualism to cope with internal consensus. This perspective intensifies the link between the two types of transition we study. Nonetheless, the initial pre-transition conditions seem to be the ones that explain the policy adopted: countries with a good economic situation preferred a big-bang strategy, e.g.

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[4] For a comprehensive review of the nature and scope of change within post-socialist Polish enterprises, see Stepién and Robinson [2002].

Poland and the "Balcerowicz programme". Albania was a poor country and implemented an "aborted" big-bang policy. Finally, also the SEE countries, Bulgaria and Romania, resorted to gradualism. The initial conditions matter also for the attractiveness of FDI which were almost absent before 1994. FDI concentrated mainly in CEE's, i.e. the Czech Republic, Poland and Hungary [Bevan and Estrin 2004].

In the early stage of transition all the countries experienced an output decline,[5] regardless of the strategy adopted. The reason for the depression was explained by the persistence of communism [Brenton, Gros, and Vanadille 1997]. Przeworski [1991], however, describes the time consumption pattern under both gradualism and big-bang as U-shaped curves, with big-bang being narrower and deeper, indicating a stronger negative effect at the beginning of the process and a faster recovery compared with gradualism. Overall, scholars find successful examples of both gradualism and shock therapy reforms [Heybey and Murrell 1999]. Claessens and Djankov [2002] find a beneficial effect of privatization on the productivity of enterprises in all the CEEc and SEEc countries, except for Romania. Two decades after 1989 the CEE and SEE countries have diverged, both in terms of growth measured by GDP *per capita* and in terms of the Human Development Index, with the CEEC always being the most developed ones. In the light of this information, the question "how a "synthetic 'real' socialist" country that did not experience transition would have performed?" gains traction.

In the aftermath of 1989 the attention to economic reforms was combined with a lively debate over institution-building [Roland 2000, 2004]. In particular, the need for intervention was felt in the SEE countries and the Western Balkans, including Albania, which showed the highest rates of corruption in the area,[6] the lowest reliability of the rule of law and accountability mechanisms, depicting a dramatically low level of government effectiveness.[7] Consistent with these initial conditions, Albania faced a very slow political transition that lasted until the early 2000's. On the other hand, Poland started from a middle level, followed by Bulgaria and Romania in a rapid democratization process.

The second stream of literature concerns the relationship between democracy and growth. This relationship is one of the most elusive in economics since it is extremely weak (and most often negative).

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[5] For a discussion regarding the nature of the depression, refer to Myant and Drahokoupil [2011: 54].

[6] Some authors claim that corruption was introduced as a 'greasing the wheels' mechanism in socialist systems aimed at having access to scarce goods as the Russian practice of *blat*.

[7] Dimitrova-Grajzl [2007] illustrates a return to pre-communist traditions and norms, suggesting the strengthening of a historical legacy over present day development that has been found in other environments. Specifically, Karaja [2013] provides empirical evidence of the impact of both the Ottoman and the Habsburg legacy over growth in this region.

Barro [1996] analyses a cross-section of about 100 countries from 1960 to 1990 using a system of three equations. Estimations are done by instrumental variables: the instruments are the five-year earlier value of log GDP, the actual values of schooling, life-expectancy, rule of law and terms of trade and the earlier values of the other variables (which include the fertility rate, government consumption ratio, public educational spending ratio, black market premium, investment ratio) involved in the estimations. A positive non-linear effect is found: the middle level of democracy is the most favourable to growth, the lowest comes second and the highest third. According to Barro, maintenance of the rule of law, free markets, small government consumption, and high human capital are the most important determinants of growth. Tavares and Wacziarg [2001] identify eight variables that can possibly be endogenous to democracy: political instability, governance distortions, government size, human capital, income inequality, trade openness, and physical capital accumulation. They find that the overall effect of democracy on growth is negative. This result is the outcome of a positive effect on growth through human capital accumulation and reduction of income inequality, and a negative effect of reduced physical capital accumulation and increased government consumption. Persson and Tabellini [2009] argue that because investment reacts to expected returns, and not just actual, regime change affects growth. Growth will accelerate before an anticipated democratization and decelerate well before an anticipated coup. In their model the probability of regime change depends on a country's "democratic capital". This capital is assumed to accumulate in years of democracy and in countries with democratic neighbours but to depreciate under autocracy. The results are consistent with the model in two samples: one from 1960 to 2000, and another one dating from 1850 to 2000. Along the same line of "democratic capital" and dealing with a number of issues ranging from measuring democracy to modelling the dynamics of GDP in the years before democratization, Acemoglu et al. [2014] find a significant and positive effect of democratization on GDP (about 20% in three decades, implying that the rise of democracy in the last 50 years has yielded about 6% higher world GDP).

Papaioannou and Siourounis [2008] consider democratization processes for about 65 countries over the period 1960–2000. They employ an event study approach and analyze growth before and after democratizations. The dynamic panel estimates imply that democratizations are associated with a one percent increase in real *per capita* growth. During the transition, growth is slow and even negative; after the third post-democratization year growth peaks and then stabilizes at a higher level. Persson and Tabellini [2008] explore issues on the relationship between democracy and growth emphasizing the role of heterogeneity. They combine the above mentioned method with the propensity score matching estimator. This semi-parametric methodology relaxes linearity and it is therefore well suited for the study of heterogeneity. They uncover a positive but insignificant effect of transitions from autocracy to democracy.

The third strand addresses the timing of political and economic liberaliza-
tions. Giavazzi and Tabellini [2005] and Persson and Tabellini [2008] apply
a difference-in-difference methodology, exploring issues ranging from the re-
lationship between political and economic liberalizations to the effect of de-
mocracy on growth. They find positive feedback effects between economic and
political reforms. The timing of events indicates that causality is more likely to
run from political to economic liberalization, rather than vice versa, but feed-
back effects in both directions cannot be excluded. The sequence of reforms
matters: countries that first liberalize and then become democracies do much
better than countries that pursue the opposite sequence. Grosjean and Senik
[2011] disentangle the direction of causality from democracy to support for
a market economy and from market development to support for democracy in
a spatial regression discontinuity approach based on frontier-zones in Central
and Eastern Europe and in the former Soviet Union that are under different
political regimes but are integrated. They find a positive and significant effect
of democracy on support for market economy but no effect of liberalization
on support for democracy.

2. Methodology and data

The set up of the counterfactual analysis requires a careful description of its
main elements: the treated group, the treatment and the donor pool.

The set of treated units consists of Albania, Bulgaria, Poland and Romania.
The choice of the countries is dictated by data availability. These countries
represent different clustered regions within Eastern Europe, as described in
Section 2: Poland is part of Central Eastern Europe, Bulgaria and Romania
are Southern Europeans, whereas Albania is part of the Balkan area and was
strongly insulated and deprived during the communist rule and, as seen before,
does not belong to any of the groups into which Eastern European transitions
countries are usually divided.

The outcome variable that we consider is a proxy for economic development
which we label *GDP*. It is measured as the PPP Converted GDP *Per Capita* at
2005 constant prices from the Penn World Tables 7.1 [Heston, Summers, and
Aten 2012]. The "1989 treatment" is uniquely defined in time [the fall of the
Berlin Wall in November] but it does not represent a clear-cut phenomenon.
This step is fundamental, because "using inappropriate comparisons may
lead to erroneous conclusions" [Abadie, Diamond, and Hainmueller 2014: 2].
Specifically, for the purpose of the present analysis the 1989 shock may repre-
sent: (i) the trigger of economic transition, (ii) the removal of barriers for po-
litical transition, (iii) the beginning of a twofold transition. Depending on the
treatment that we consider, we define three alternative sets of donors.

First, we include in the *non-economically free* donor pool all those countries that between 1995 and 2010 show the Economic Freedom index (EFW hereafter, taken from Miller et al. 2014) at the most equal to the maximum initial level in the sample of treated units, that is EFW = 55.2 (see Figure 1). Secondly, we consider political freedom only and we build the *non-politically free* donor pool with those countries that between 1995 and 2010 show a Polity IV [Marshall, Jaggers, and Gurr 2012] DEMOC value equal to 0 in all the periods. Finally, we consider the 1989 shock as the trigger for a multi-dimensional transition, we include in the most stringent *non-free* donor pool those countries that are both *non-economically* and *non-politically free*. Appendix 1 lists the countries in each donor pool.

Figure 1 shows the two indices for the countries included in the study. The index for democracy (or lack of it) is available for a much longer time than the economic liberalization index, which starts at the middle of the '90's. We see that political liberalization is much more similar across countries than economic liberalization. The former starts in 1989 and, with the exception of Albania that experiences a shortly-lived reversal, it has an upward trend for all
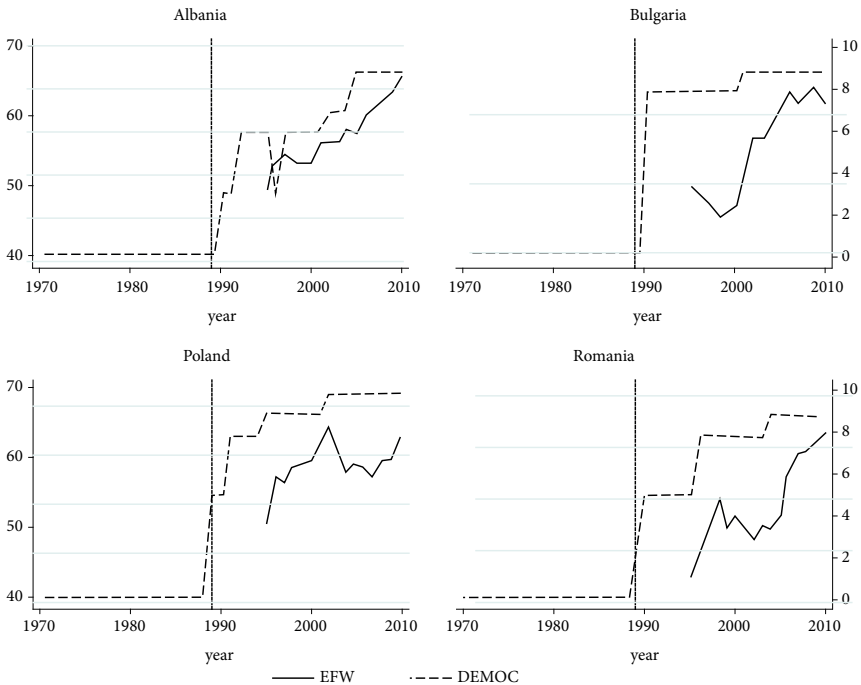

Figure 1. Economic freedom (EFW) and democratization (DEMOC) in the treated countries

Source: Own calculations from EFW [Miller, Kim, and Holmes 2014] and Polity IV [Marshall, Jaggers, and Gurr 2012] DEMOC data

the countries. In turn, economic liberalization experiences one or more reductions in all the countries over the time-span we consider.

Once the analysis has been set up we build the synthetic control estimator as:

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

where:

m = 1, …, k is the set of explanatory variables employed as predictors,
X_1 represents the pre-intervention characteristics of the treated unit,
X_0 includes the values for the donor pool (never treated),
W is the vector of weights, ranging between zero and unity, attached to each observation in the donor pool such that the sum of the weights equals one,
v_m is a weight that reflects the predictive power of the *m*-th determinant on the outcome.

The synthetic control estimator of the treatment is given by:

$$GDP_{1t} - \sum_{j=2}^{J+1} w_j^* GDP_{jt},$$ (2)

where:

J + 1 is the number of countries, where unit 1 is the treated one and j = 2, …, J + 1 indicates the donor pool,
w^* is the synthetic control obtained with the minimization in equation 1,
GDP is the outcome variable.

Following the literature [Nannicini and Ricciuti 2010; Abadie, Diamond, and Hainmueller 2014] we include in the set of *k* explanatory variables: the past five-years' averages of the dependent variable to account for the lagged levels of economic development; the rate of change of population, *Population growth*; the investment share of the GDP, *Investment* (all these variables are taken from Heston et al., 2012); the share of population aged 15 and over that completed secondary level school, *Schooling* [Barro and Lee 2013]; a dummy variable equal to 1 if the country is democratic, *Dem*;[8] the annual GDP deflator, *Inflation* [World Bank 2012].[9] Table provides some descriptive statistics for these variables.

Given the issues raised in the previous Section and the methodology outlined here, we can spell out the specific questions we ask in this paper:

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[8] *Dem* = 1 if *democ* > 5 in the Polity IV dataset, *dem* = 0 otherwise. This variable has been dropped from the predictors when we use either the non-politically free or the non-free donor pool, because the countries have been already selected according to their degree of democracy.

[9] The inflation data has many missing values and this limitation is especially severe for Poland where no information is available before 1990. Therefore we dropped *Inflation* when assessing the effect of the treatment over Poland.

Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP	4797	7,963.19	9,789.99	160.8	55,838.6
GDP average 1970–1974	4797	5,566.04	6,393.08	385.3	30,493.4
GDP average 1975–1979	4797	6,256.53	6,999.23	398.5	29,779.7
GDP average 1980–1984	4797	6,658.14	7,506.58	446.9	29,947.2
GDP average 1985–1989	4797	7,243.72	8,492.30	403.8	32,184.6
Economic Freedom index	1729	59.58	10.65	15.6	88.9
Population growth	4680	0.02	0.02	−0.16	0.2
Investment	4797	22.51	10.84	−11.5	80.4
Schooling	4346	14.08	11.78	0.03	53.5
Dem	4797	0.47	0.5	0	1
Inflation	4406	39.4	533.26	−33.59	26,762.02

Sources: See text.

1. Did the 1989 fall of the Berlin Wall cause growth in the Eastern European countries?
2. Was growth stimulated by economic or political transition?
3. Would a 'synthetic socialist' regime have performed better in transition countries?

3. Results

The counterfactual analysis is performed by inspecting figures reporting the pattern of the treated unit compared with the pattern of the counterfactual. Figure 2 shows the results of the analysis using the *non-politically free* pool of donors. The *x*-axis represents time, and the vertical line indicates the treatment year, i.e. 1989. The *y*-axis measures the outcome, that is *GDP*. The solid line describes the pattern of *GDP* in the treated country considered, whilst the dotted line is the synthetic control unit.

The most striking result is that democratization did not affect the four countries in the same way. Poland and Bulgaria have always been more developed than the synthetic control unit, suggesting a positive impact of political transition over growth. This impact is stronger for Poland, a country that, as already pointed out, implemented the Balcerowicz Plan in 1989, and in the 1990's was heavily influenced by the IMF guidance through the transition process. Albania, after an initial decade of output fall, started growing more than the counter-

factual; in Romania, on the other hand, democracy left unaffected, or slightly worsened, the economic conditions.

The limitation of the synthetic control method is that it does not allow the assessment of the significance of the results using standard inferential techniques. As suggested by Abadie, Diamond, and Hainmueller [2010], however, placebo experiments can be implemented to draw inference. They assess whether the estimated effect for the treated country is large relative to the effect for a country chosen at random. Placebo testing compares the estimated treatment effect for the country under investigation with all the (fake) treatment effects of the control countries obtained from experiments where each control country is assumed to leave real socialism in the same year of the treated country. If the estimated effect in the treated country is larger than those in most of the (fake) experiments, we can safely conclude that the baseline results are not just driven by random chance.

The placebo test in space illustrated in Figure 3 confirms the evidence of Figure 2.[10] The *y*-axis, this time, measures the difference between the treated and the counterfactual for every country in the donor pool. In this way we check
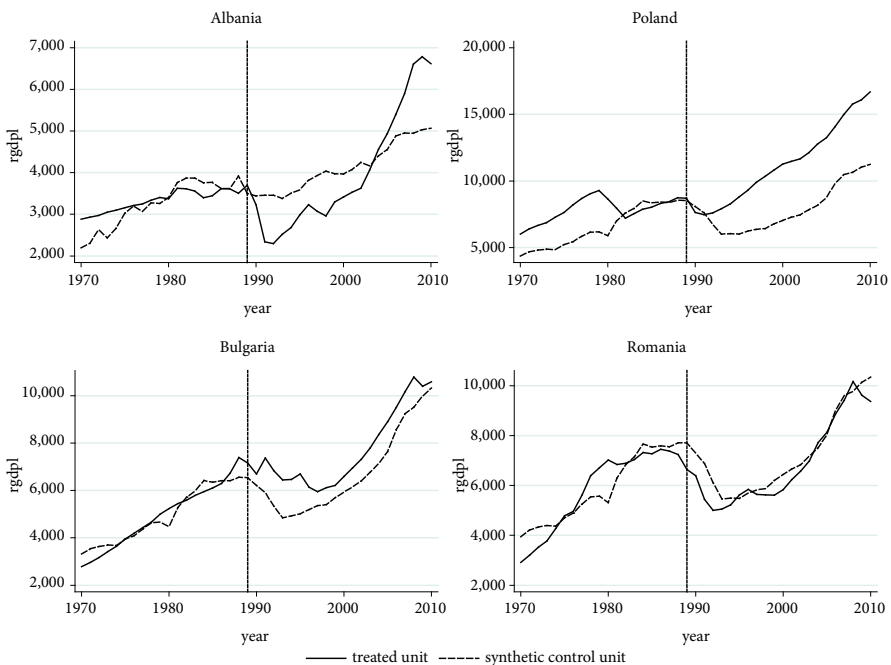

Figure 2. Synthetic controls from the sample of non-politically free donors

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[10] Following Abadie, Diamond, and Hainmueller [2010] we discard all countries from the placebo tests for which the RMSPE for the pre-treatment period is more than three times larger than the RMSPE for the treated unit under consideration for the same period.
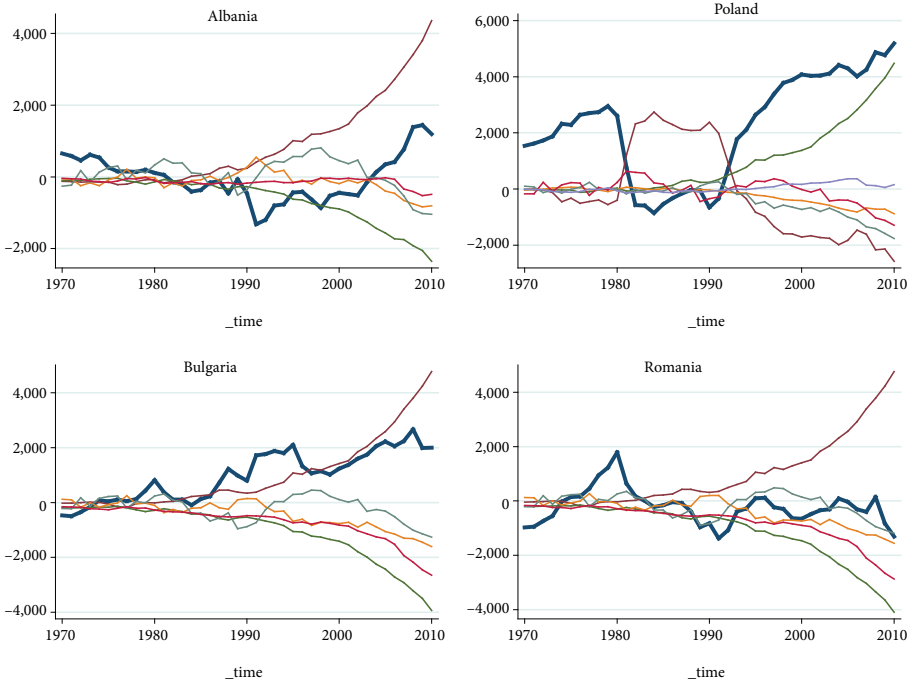
Figure 3. Placebo tests (non-politically free donors)

whether our synthetic control is different from other possible controls that can be constructed. The bold line represents the treated unit. Democratization caused a significant output fall in Albania, as the extreme values of the bold line in the top-left panel testifies. This evidence is related to the backwardness of this economy which was also plagued by high levels of corruption and informal economic activity, which represented a tighter constraint to growth. At the same time, political competition significantly triggered growth in Poland starting from the early '90's and, to a lesser extent, in Bulgaria. The robustness of the results (Figure 3) are much more blurred for Romania as the placebo tests do not indicate a stronger effect on the treated if compared to other countries. All in all, the results of the placebo test basically confirm those of the synthetic control: the results of our experiments tend to be different from other possible experiments in three out of four cases. In the fourth case (Romania) the synthetic control itself was not different from the actual path of GDP and it is neither bigger nor smaller than other combinations of countries.

Similar results, but more clear-cut, are shown in Figure 4, where we employ the set of *non-economically free* donors. The fit of the algorithm improves and we find a definite growth-enhancing effect of economic freedom in Poland and Bulgaria where the effect is larger than in Figure 2. Albania shows once again

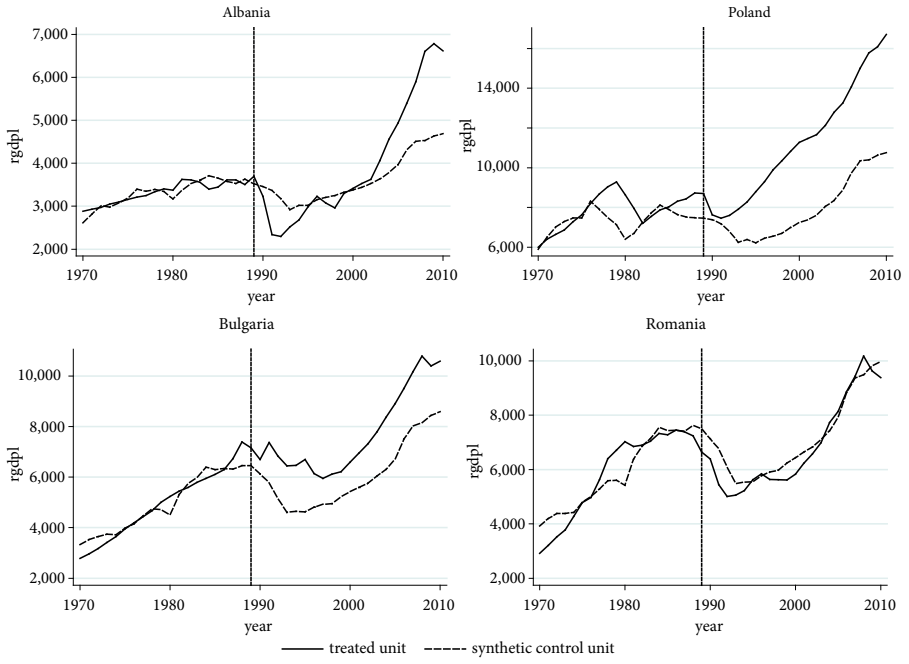**Figure 4. Synthetic controls from the sample of non-economically free donors**
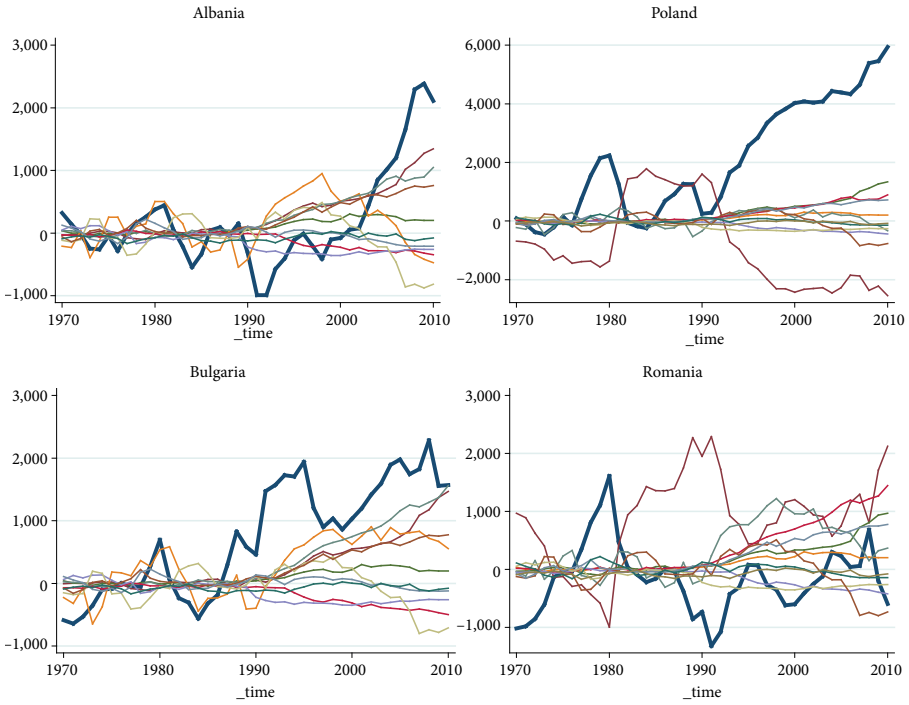

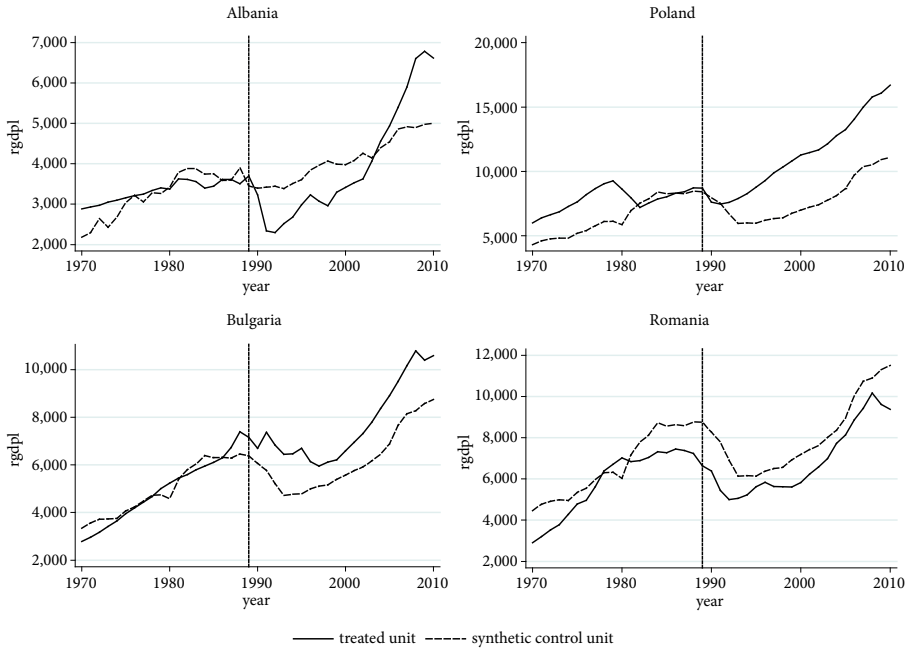**Figure 5. Placebo tests (non-economically free donors)**

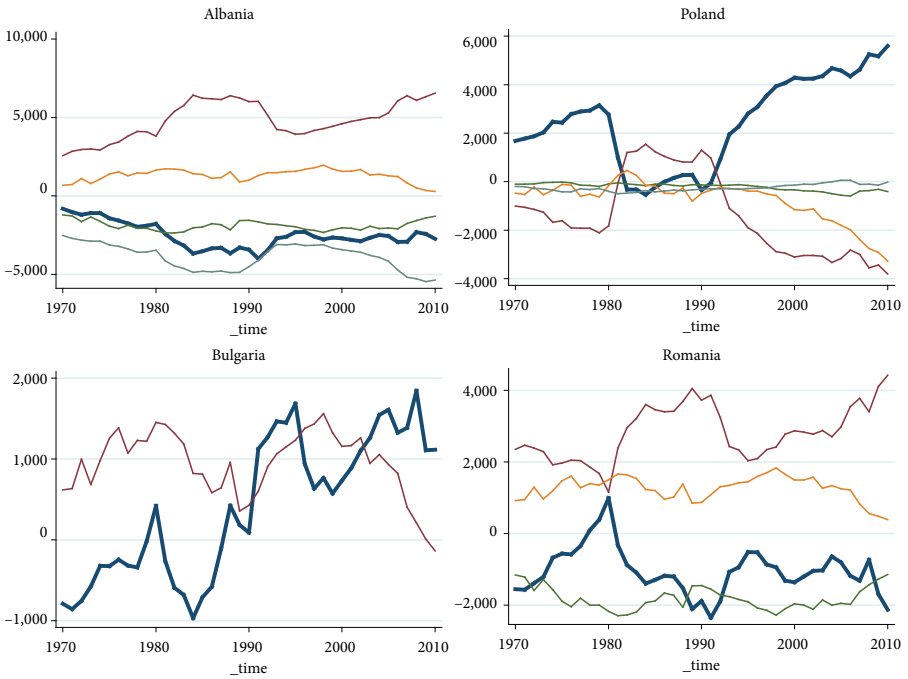**Figure 6. Synthetic controls from the sample of non-free donors**

Figure 7. Placebo tests (non-free donors)

a pattern of recession and subsequent growth with a switching point placed earlier in time: it seems than economic freedom helped recovery during transition better than political competition. This picture is consistent with the very slow path of democratization of Albania depicted in Figure 1. The effect over Romania once again is ambiguous, showing a small gap between the actual pattern of GDP and the counterfactual. Moreover, this difference is not consistent with the placebo tests in Figure 5. This effect is probably related to the lack of benefits from privatization found by Claessens and Djankov [2002]. For the other countries, in contrast, the counterfactual always lies above or below the other fake treatments, therefore showing a robust positive effect of economic openness over growth (with the slight difference of Albania, for which we find a strong negative effect at the beginning and a strong positive effect at the end, whereas in the middle the counterfactual is mostly in line with the other fake treatments).

When we use the donor pool of *non-free* countries we find results consistent with the previous discussion (Figure 6) mostly in line with the pool of *non-economically free* countries. An exception is Romania for which the counterfactual is always better than the actual pattern of GDP. Unfortunately, due to the very small size of the donor pool, the robustness of the algorithm is weaker than before (Figure 7) therefore these results should be taken with some caution.

Finally, we comment on the construction of the synthetic control units. Appendix 2 shows the weights resulting from the algorithms presented in the previous section. As an example we observe that the synthetic control unit for Albania using the non-politically free donor pool is obtained from the linear combination of Syria (0.782), Cuba (0.166) and Morocco (0.053). In general we observe that Cuba contributes to the counterfactual in all the models as expected given its nature of closed economy ruled by a communist regime. Furthermore, the set of matched donors differs with respect to its size and composition.

Appendix 3 shows the predicted balance between the treated unit and the donor pool which is a broad measure of the goodness of fit of the linear combination. We observe that the lagged five-years' averages of the *GDP* and population growth fit quite well between the treated unit and the synthetic; *Schooling* does not fit very well for Albania and Romania, whilst *Investment* and *Inflation* show a consistent divergence between the two columns.[11]

If we look at the fit of the algorithm, we observe a good match between the treated unit and the counterfactual before the treatment limited by the small number of countries in the donor pool. The root mean squared prediction error (RMSPE), in fact, always shows large values. It measures the "lack of fit between the path of the outcome variable for any particular country and

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[11] In the models for Poland, as already pointed out, the *inflation* variable has been omitted because of missing data; furthermore, some of the past five-years' averages have been dropped in the Polish model using non-politically free donors because of computational problems.

its synthetic counterpart" [Abadie, Diamond, and Hainmueller 2010: 18]. Nonetheless, we note that similar values have been found in the literature [e.g. Billmeier Nannicini and 2013] and that the RMSPE is always larger for Poland and smaller for Albania.

Conclusions

In this paper we have performed a number of experiments to analyze the effect of the fall of the Berlin Wall on growth in four Eastern European countries. We applied a new methodology that allows us to address this issue taking into account both the observable and unobservable characteristics and to draw data-driven comparisons. The effect of 1989 is overall positive although the initial effect was negative and in some countries it lasted for a few years. Therefore the answer to our first question is positive, whereas the answer to the third question is negative.

The fall of the Berlin Wall brought two changes: one on political institutions that became democratic and one on economic institutions that allowed for private property of means of production and price liberalization. Overall, the effect of economic freedom is larger than the effect of democratization: in Poland and Bulgaria we uncover a large positive effect of economic freedom, whilst in Bulgaria we find a smaller effect of democratization. This finding, which answers our second research question, links our work to the larger literature on political and economic liberalizations. This result is in line with most of this literature but has been obtained in a way that allows us to take into account the idiosyncrasies that history causes in each country. Looking at individual countries, in Albania, after a strong initial recession, there is a recovery driven by economic freedom. The political system during transition was plagued by corruption, a Ponzi-scheme destroyed savings, and the initial conditions were quite bad, since the country was the most isolated in Eastern Europe. There was a strong migration that deprived the country of the young and potentially productive workforce. Poland is the opposite: given its historical background in industrial production it was able to build on these foundations and on the path towards the European Union. Dismantling the previous state-owned industrial companies was a demanding task, but the preconditions (also in terms of political leaders that arose during the opposition to the Jaruzelski rule) were more benign than in other countries. Bulgaria and Romania have been lagging behind Poland: they started with the worst political and economic preconditions and their speed towards joining the European Union was slower. Romania, in particular, is an outlier in our analysis since it does not show any significant effect comparing the actual with the synthetic economic performance. This effect is possibly related to the lack of benefits from privatization found by Claessens and Djankov [2002].

Appendix

1. Potential comparison units
NON-ECONOMICALLY FREE: Burundi; Congo Kinshasa; Congo Brazzaville; Cuba; Iran; Laos; Lesotho; Nepal; Syria; Togo; Vietnam; Zimbabwe.
NON-POLITICALLY FREE: China; Cuba; Laos; Morocco; Syria; Vietnam.
NON-FREE: Cuba; Laos; Syria; Vietnam.

2. Synthetic control weights

Set of donors	Non-economically free		Non-politically free		Non-free	
Albania	Cuba	0.257	Cuba	0.166	Cuba	0.157
	Iran	0.068	Morocco	0.053	Syria	0.843
	Syria	0.196	Syria	0.782		
	Togo	0.473				
	Zimbabwe	0.006				
Bulgaria	Cuba	0.711	China	0.315	Cuba	0.667
	Lesotho	0.289	Cuba	0.685	Laos	0.087
					Syria	0.149
					Vietnam	0.098
Poland	Cuba	0.642	Cuba	0.966	Cuba	0.947
	Iran	0.358	Morocco	0.034	Syria	0.053
Romania	Cuba	0.801	Cuba	0.867	Cuba	1
	Syria	0.199	Vietnam	0.133		

Typically the non-free sample is the intersection of the other two samples. When this does not happen, it is due to the algorithm of the software: for example in the case of Bulgaria, Syria belongs to the potential poll of donors for non-politically free countries, but it is not actually chosen in that treatment, whereas it is selected in the non-free treatment.

3. Predicted balance and rmse

1. *Non-democratically free* donors

	Albania		Bulgaria		Poland		Romania	
	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic
GDP average 1970–1974	2988.4	2445.42	3195.37	3572.03	–	–	3540.33	4253.97
GDP average 1975–1979	3272.82	3165.83	4448.03	4342.36	–	–	5695.27	5195.79
GDP average 1980–1984	3514.57	3733.67	5602.41	5571.61	–	–	7028.86	6656.87
GDP average 1985–1989	3576.36	3685.42	6733.37	6451.54	8441.79	8444.01	7199.96	7621.49
Population growth	0.02	0.03	0.003	0.01	0.01	0.01	0.01	0.01
Investment	46.68	17.67	27.58	16.57	18.38	8.05	35.34	7.64
Schooling	15.08	5.53	12.49	13.55	12.23	15.56	21.02	15.53
Inflation	−0.53	10.58	0.38	2.59	–	–	2.05	54.23
RMSE	342.07		382.17		1889.72		687.88	

2. *Non-economically free* donors

	Albania		Bulgaria		Poland		Romania	
	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic
GDP average 1970–1974	2988.40	2899.80	3195.37	3592.92	6640.93	6838.03	3540.33	4261.15
GDP average 1975–1979	3272.82	3334.35	4448.03	4411.65	8564.59	7660.80	5695.27	5254.37
GDP average 1980–1984	3514.57	3476.24	5602.41	5584.61	7841.87	7243.06	7028.86	6667.18
GDP average 1985–1989	3576.36	3583.31	6733.37	6371.36	8441.79	7601.40	7199.96	7483.00
Population growth	0.02	0.03	0.00	0.01	0.01	0.02	0.01	0.02
Investment	46.68	18.99	27.58	13.31	18.38	17.66	35.39	9.48
Schooling	15.08	6.94	12.50	12.25	12.23	14.29	21.02	13.49
Dem	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inflation	−0.53	7.82	0.38	5.38	–	–	2.05	4.58
RMSE	150.31		392.90		961.56		655.61	

3. *Non-free* donors

	Albania		Bulgaria		Poland		Romania	
	Treated	**Synthetic**	**Treated**	**Synthetic**	**Treated**	**Synthetic**	**Treated**	**Synthetic**
GDP average 1970–1974	2988.40	2445.39	3195.37	3620.76	6640.93	4672.80	3540.33	4822.23
GDP average 1975–1979	3272.82	3171.48	4448.03	4448.80	8564.59	5726.58	5695.27	5898.00
GDP average 1980–1984	3514.57	3743.88	5602.41	5638.96	7841.87	7329.92	7028.86	7570.50
GDP average 1985–1989	3576.36	3658.63	6733.37	6345.75	8441.79	8350.02	7199.96	8664.76
Population growth	0.02	0.03	0.00	0.02	0.01	0.01	0.01	0.01
Investment	46.68	16.98	27.58	9.19	18.38	7.78	35.39	7.16
Schooling	15.08	5.40	12.50	12.51	12.23	15.32	21.02	15.98
Inflation	–0.53	10.90	0.38	45.28	–	–	2.05	2.63
RMSE	342.43		396.56		1914.42		1065.88	

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