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REASSESSING THE ECONOMIC EFFECTS OF POST-SOCIALIST CONSTITUTIONS USING THE SYNTHETIC CONTROL METHOD

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Reassessing the Economic Effects of Post-Socialist Constitutions Using the Synthetic Control Method

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Abstract

In response to the problems of endogeneity and causality in comparative studies with relatively small sample sizes, a new statistical approach has recently been developed, called the synthetic control method. In this paper we apply this method to reassess the effect of constitution-making in post-socialist countries of Europe and Asia on performance of these countries in the field of economic reforms during the post-1989 transition. We first verify the existence of such effects and evaluate their statistical significance. Then we search for the explanation of these effects and their magnitude focusing on the characteristics of these constitutions and the solutions that they envisage (structural provisions, bills of rights and enforcement mechanisms). Thanks to employing this approach we are able to avoid several technical caveats that have arisen in earlier studies and verify the validity of their conclusions. In addition, we obtain country-specific results for each individual post-socialist state, as well as formulate detailed insights regarding the actual mechanisms or channels of influence of the constitutional framework on economic reforms.

Keywords:

Constitutional Economics, post-socialist transition, economic reforms, synthetic control method, synthetic counterfactuals

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1 Introduction

During the last ca. 15 years theoretical and empirical studies rooted in Constitutional Economics confirmed the significant role of constitutions (e.g. models of government, electoral systems, constitutional rights and freedoms) for the functioning of the economy and economic outcomes (see survey by Voigt 2011a). This approach views the constitution as a set of “legal-institutional-constitutional rules that constrain the choices and activities of economic and political agents” (Buchanan 1987, p. 585). Containing rules which impose constraints on activity of state authorities, the constitution acts as a mechanism allowing to turn promises made by representatives of state power into credible commitments. In this way the state constitutional system serves as a mechanism allowing to counteract time-inconsistency problems connected with drafting and implementing economic policy.

Post-socialist transition taking place since 1989 in countries of Central and Eastern Europe, as well as later in Central and Southwestern Asia, provided a particularly fruitful ground for Constitutional Economics studies. Since 1990 all post-socialist countries of Europe and Asia¹, with the exception of Latvia, adopted new constitutions envisaging varying solutions as regards the structure of government, bill of rights and other issues². This unprecedented time of broad-scale constitutional and, more generally, institutional change has sometimes been called a “gigantic natural experiment” (Elster 1991, p. 449), attracting interest of legal scholars, political scientists, sociologists and other social scientists. The contribution of economists concerns, in particular, linking constitutional change with economic policy pursued in these countries and economic performance.

Economic studies relating to post-socialist constitutions conducted to date reveal that several aspects of the constitutional framework laid down in these supreme legal acts, and their practical operation, mattered for economic performance of these countries during transition (e.g. Hellman 1997, Ahrens and Meurers 2001, Ahrens 2007, Raudla 2010, Metelska-Szaniawska 2009, 2014). In principle, the results of these studies confirm the constitution’s main function as a commitment mechanism for policy-making in transition, including the performance in broad-scale post-socialist economic reforms.

¹ These are: countries of Central and Eastern Europe (Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia); former Yugoslavian republics (Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia, Slovenia); and former Soviet republics (Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan). Acknowledging the differences in the political and economic systems functioning in these countries before 1989, we further refer to all of them as “postsocialist countries” or “transition countries”.

² Where no new constitutional act was enacted, significant amendments have been introduced.

Despite their thought-provoking findings and stimulating conclusions, most of the empirical studies in the field of Constitutional Economics, including those pertaining to post-socialist constitutions, struggle with problems of endogeneity and causality, which undermine the validity of the employed empirical models and analytical techniques. The qualitative nature and country-specificity of various aspects examined in such analyses can also significantly limit the explicability of quantitative large-sample studies conducted within this field, as well as the reliability of the results and conclusions stemming from them. In this situation it comes as no surprise that authors active in this field often call for case study analyses, allowing to focus on country specificity and institutional detail, to support the large sample econometric analyses. Comparative case study research however suffers from its own problems and shortcomings, including in particular the lack of formalization in selecting the comparison units.

In order to circumvent the problems of endogeneity and causality in comparative studies with relatively small sample sizes, a new statistical approach has recently been developed, called the synthetic control method. It focuses on comparing the evolution of a studied outcome variable for a unit (e.g. country or region), where a particular intervention or event took place, with its evolution for a “synthetic counterfactual” (i.e. “synthetic” unit of interest, where the studied intervention or event did not occur) constructed based on a data-driven procedure of selecting comparison units that approximate the characteristics of the unit exposed to the intervention. Recently, the method has been successfully applied in several studies of economic consequences of large-scale events such as natural catastrophes (e.g. Cavallo et al. 2010, Barone and Mocetti 2014), political conflicts (e.g. Bove et al. 2014 and Costalli et al. 2014 – on civil wars; or Acemoglu et al. 2014 – on Egypt’s Arab Spring), as well as in studies focusing on effects of legal and policy interventions (e.g. Abadie et al. 2010, Bohn et al. 2014, Heim and Lurie 2014, Baum and Ruhn 2013, Doerrenberg and Peichl 2014). In this paper we apply the synthetic control method to reassess the effect of constitution-making in post-socialist countries on their performance in the field of economic reforms during transition. We proceed in two steps: Firstly, we verify whether the adoption of a constitution had any effect on economic reforms in each of the post-socialist countries (and if so, then was this effect positive or negative, and what was its magnitude). Secondly we study in what way these effects depend on the actual constitutional solutions adopted within these legal acts. Thanks to employing this novel approach we are able to avoid several technical caveats that have arisen in earlier studies and verify the validity of their conclusions. In

addition, it allows us to obtain country-specific results for each individual post-socialist state, as well as formulate valuable insights regarding the actual mechanisms or channels of influence of the constitutional framework on economic reforms.

The paper is organized as follows. Section 2 provides the relevant background information about post-socialist constitutions, as well as a short overview of hitherto findings regarding their significance for economic transition in post-socialist Europe and Asia. In Section 3 we introduce the synthetic control method, together with its advantages, requirements and hitherto applications. Section 4 presents the design of the empirical study, its findings and their discussion. Conclusions are formulated in the final section.

2 Post-socialist constitutions and economic reforms in transition³

Following the downfall of socialism (or communism), it became impossible for post-socialist countries to function on the basis of their socialist (communist) constitutions. New legal acts providing fundamentals for creating new constitutional systems – the rule of law, separation of powers, civil society or nation’s sovereignty – became a necessity. The adoption of post-socialist constitutions took place in the period 1990-2011, with greatest intensity between 1990 and 1996 (see details in Table 1). Serbia and Croatia adopted new constitutions in 1990 although at that time they still constituted components of the Socialist Federal Republic of Yugoslavia⁴. The last country to adopt its first post-socialist constitution during the 1990’s was Ukraine (in 1996)⁵. Hungary operated on the basis of its numerously amended 1949 constitution throughout most of the transition period, adopting a new constitution as late as in 2011. One country of the region – Latvia – did not adopt a new constitution after 1989, returning to its 1922 constitution (with several significant amendments).

³ This section borrows from Metelska-Szaniawska (2009, 2014).

⁴ The Croatian Constitution of 1990, forming the basis for the sovereign existence of this state, remains in force. Serbia has a new constitution adopted in 2007 (in the period 1992-2003 the Federal Constitution of FR Yugoslavia was in force, in 2003 the Constitutional Charter of Serbia and Montenegro was adopted, the union between these states dissolved in 2006).

⁵ In the second half of the 1990’s several countries adopted their second postsocialist constitutions (e.g. Albania in 1991 and 1998, Poland in 1992 and 1997).

Table 1 Constitutions in post-socialist countries of Europe and Asia

Country	Last pre-1989 constitution	Post-socialist constitution(s)
Albania	1976	(1991), 1998
Armenia	1977 ^a	1995
Azerbaijan	1977 ^a	(1991), 1995
Belarus	1977 ^a	1994
Bosnia and Hercegovina	1974 ^b	1995
Bulgaria	1971	1991
Croatia	1974 ^b	1990
Czech Republic	1960 ^c	1993
Estonia	1977 ^a	1992
Georgia	1977 ^a	(1992 reinstated), 1995
Hungary	1949	2011
Kazakhstan	1977 ^a	(1993), 1995
Kyrgyzstan	1977 ^a	1993, 2006, 2007, 2010
Latvia	1977 ^a	1922 (reinstated in 1991)
Lithuania	1977 ^a	(1990), 1992
Macedonia	1974 ^b	1991
Moldova	1977 ^a	1994
Montenegro	1974 ^b	1992, 2007
Poland	1952	(1992), 1997
Romania	1965	1991
Russia	1977 ^a	1993
Serbia	1974 ^b	1990, 2006
Slovakia	1960 ^c	1992
Slovenia	1974 ^b	1991
Tajikistan	1977 ^a	1994
Turkmenistan	1977 ^a	1992, 2008
Ukraine	1977 ^a	1996
Uzbekistan	1977 ^a	1992

Notes: Provisional/interim constitutions in brackets.

^a Constitution of the Soviet Union. In most of the republics there also operated “republican” constitutions.

^b Constitution of the Socialist Federal Republic of Yugoslavia.

^c Constitution of the Czechoslovak Socialist Republic.

Source: Own elaboration on the basis of Elkins et al. (2014).

The main common feature of post-socialist constitutions is the attempt, reflected in their content, to break away from the socialist (communist) past, by giving priority to provisions declaring the democratic nature and sovereignty of these states. Nevertheless, specific constitutional solutions adopted by these countries vary significantly, also as regards the ‘core’ constitutional provisions regulating the ‘machinery’ of government, bills of rights, and enforcement mechanisms. While parliamentary systems of government are encountered e.g. in Albania, Estonia, Hungary, and Latvia, presidential systems, or similar models, have been adopted in countries, which emerged after the dissolution of Soviet Union in Central and Southwestern Asia⁶. Concerning catalogues of rights and freedoms, post-socialist countries did not develop a common constitutional model either. This is most clearly visible with regard to socio-economic rights. While some constitutions list comprehensive rights regarding social security, education, healthcare, work protection, etc. (Belarus, Croatia, Czech Republic, Moldova, Poland, Romania, Russia, Slovakia, Ukraine), others provide only for a limited number of rights (the Baltic countries, Bosnia and Herzegovina, Georgia). The practical operation of provisions regarding constitutional rights differs even more significantly amongst the discussed countries. Finally, regarding enforcement mechanisms, all post-socialist countries examined in this paper, except Turkmenistan, established constitutional courts for this purpose. However, they differ significantly as regards inter alia the court’s position vis-à-vis other state organs, guarantees of the independence of judges and internal autonomy of the courts, as well as the legal effects of courts’ judgments.

The starting point for recent research on economic effects of constitutions is that constitutional rules, functioning as ‘the rules of the game’ for political and economic actors in a state, determine the institutional setting for policy-making and influence political outcomes (Persson and Tabellini 2003). By doing so these rules participate in transforming citizens’ preferences regarding policy into policy decisions. The latter influence the functioning of markets and economic performance. This approach can also be applied to policy decisions in the area of post-socialist economic reforms (involving privatization, liberalization, enterprise restructuring, competition policy and so forth)⁷.

⁶ Several countries, such as Belarus, Croatia, Russia, and the Ukraine, are classified as states with a presidential-parliamentary or semi-presidential system.

⁷ Many studies (e.g. Hellman 1997, Falcetti et al. 2002, Radulescu and Barlow 2002, Babetskii and Campos 2007) argue that such reforms do not translate automatically to higher growth rates (at least not in the short run). Therefore, postsocialist transition provided a particular motivation for the analysis of the link between constitutional rules and economic policy (economic reforms) – an intermediate step in Persson and Tabellini (2003).

Based on the central claim of Constitutional Economics, according to which the constitution acts as a commitment device for the state in its policy-making activity, one can propose the following approach to the argument concerning the role of constitutional rules for performance in the area of economic reforms. The constitution, allowing for counteracting the time-inconsistency problem connected with pursuing public policy, containing a catalogue of fundamental rights and freedoms, as well as other constraints on the activity of state authority, allows for turning promises made by representatives of state power into credible commitments. Economic reforms require investments from non-state actors and may be costly, especially in the short run. If promises made by the state authority to enforce property rights are credible, then these actors will adopt a longer time horizon and will be more willing to make investments. Hence the role of the constitution for economic reforms in transition. It is primarily fulfilled by the constraints imposed by the constitution on the activity of the state authority (low concentration of political power) and by the functioning of a relatively broad bill of rights. The latter can be regarded as an indispensable precondition for secure property rights and thus a guarantee of a minimum amount of certainty that is required for higher investment rates (Blume and Voigt 2007). Having their basic rights and freedoms envisaged by the constitution, individuals will be less reluctant to undertake pro-reform activity that could require short-run sacrifices. This regards both the socio-economic rights (e.g. the willingness of different groups of employees to accept the uncertainty connected with engaging in reforms will be higher when the constitution envisages relatively broad guarantees regarding employment), as well as political rights and civil liberties (e.g. violation of basic human rights may lead to citizens' protest and instability that are likely to have a negative effect on the readiness to invest in reforms)⁸. A broad bill of rights also contributes to the emergence of the loci of independent economic power, stimulating the reforms process and facilitating the sustainment of reforms (see e.g. Fish 1998). To complete the picture, constitutional provisions have little meaning when their enforcement is not guaranteed. This role is fulfilled by an independent constitutional judiciary. Such courts constitute the final stage in turning promises of the state authority into credible commitments. Finally, since constitutional rules formulated within the operative provisions of law differ in some countries from the principles functioning there factually, a differentiation is introduced between *de jure*

⁸ In addition, some studies suggest that different types of rights may be regarded as complements, where respect for basic human rights cannot be substituted by anything else (Blume and Voigt 2007). Other authors argue that respect for basic human rights may be treated as a signal regarding government credibility in promising economic (property) rights (Farber 2002).

constitutions (sets of rules contained within the enacted law) and *de facto* constitutions (sets of factually operative rules).

In the mid-1990's a debate emerged on the role of the constitution in the process of economic transition between the so-called negative and positive constitutionalists. The first view (based on North 1990, Weingast 1993, and much of the Constitutional Economics literature) argues that constitutions, being crucial mechanisms for establishing credible commitments, give economic actors the confidence required for entering into contracts and making long-term investments, which are necessary for the adoption and success of economic reforms. Such reforms, just as any policy-making activity of the state, are affected by the time-inconsistency problem. The constitution allows for counteracting this problem by enhancing stability of the political system and restraining the discretionary power of the state. Positive constitutionalists, however, ask whether such constrained state authority is capable of pursuing economic reforms. Holmes (1995) argues that the magnitude of tasks associated with simultaneous political and economic transition requires sufficient capacity and flexibility of the state authority to push through difficult policy choices. Several years later, Ahrens (2007) proposes a market-enhancing governance structure for post-socialist countries, emphasizing the role of an institutional framework guaranteeing state strength, which at the same time places effective limits on this strength (*inter alia* through checks and balances), what can be viewed as an indication that the two seemingly contradictory approaches of negative and positive constitutionalism are reconcilable.

Several studies looked at the influence of the concentration of political power on progress in economic reforms in transition (e.g. EBRD 1999, Hellman 1997, Kitschelt 2001). Metelska-Szaniawska (2009, 2014) extends the focus to three main elements of contemporary constitutions – the structure of power, constitutional rights and freedoms, as well as the constitutional enforcement mechanism. The main finding of that panel data analysis, covering 20-25 post-socialist countries for the period 1989-2012, is a confirmation of the link between the constitutional framework and performance in economic reforms. In particular, countries with a lower concentration of state power (implied *inter alia* by a deeper separation of powers and therefore more veto-players) experience more successful performance in the field of economic reform, just as countries with a relatively broader scope of factually functioning catalogue of political rights and civil liberties. Noteworthy exceptions (with regard to concentration of state power) are countries committed to European integration (those that became member states in 2004) and countries lacking democratic transitions (Central Asia).

De facto constitutional court independence is another significant feature of the post-socialist countries' constitutional framework conducive to successful economic reforms (while this is, in general, not the case for *de jure* independence). In principle, therefore, the obtained results confirm the main function of the constitution as a commitment mechanism (with some non-uniformity in the influence of constitutional variables on economic reforms in different groups of countries, at different periods of transition and for different categories of reform).

3 The synthetic control method

In this section we introduce the synthetic control method⁹ as a statistical approach allowing to study causal inference in comparative case studies. Comparative cases studies are based on the idea that the effect of an intervention on variables of interest can be inferred from the comparison of the evolution of those variables between the unit exposed to the event or intervention and a group of units that are similar to the exposed unit but that were not affected by the event or intervention (Abadie 2015). More specifically, the synthetic control method focuses on the construction of a “synthetic control group” (also called an “artificial control group” – Imbens and Wooldridge 2009, p. 72) by means of searching for a weighted combination of units, which were not exposed to the event or intervention (control countries), selected so as to match, as closely as possible, the country affected by the intervention, before the intervention or event occurs, for a set of predictors of the outcome variable (Campos et al. 2014). The evolution of the outcome variable for the synthetic control group constructed in this way is the estimate of the counterfactual. The latter shows what the behavior of the outcome variable would have been for the affected country “had the intervention not happened” in the same way as in the control group. Below we present the formal details of the synthetic control method as applied to comparative case studies, drawing, in particular, on the seminal papers of Abadie et al. (2010, 2015).

Assume a sample of $J + 1$ units (e.g. countries or regions) indexed by j . Among them let unit $j = 1$ be the case of interest (“treated unit”, i.e. unit exposed to the event or

⁹ In their seminal paper for the development of this approach Abadie et al. (2010) use the plural form i.e. synthetic control methods and discuss the subsequent steps of synthetic control data analysis (constructing the synthetic control group, estimating the synthetic counterfactual, placebo tests etc.). Following the practice of subsequent literature applying this approach, we use the singular form name of this approach (i.e. synthetic control method) understanding it as a series of techniques developed under this heading for comparative case studies.

intervention of interest)¹⁰ and units $j = 2, \dots, J + 1$ – the potential comparisons (the so-called “donor pool”). Comparison units are meant to approximate the counterfactual of the case of interest without the intervention, therefore the donor pool should be restricted to units with outcomes that are thought to be driven by the same structural process as for the unit representing the case of interest and that were not subject to structural shocks to the outcome variable during the sample period of the study (Abadie et al. 2015).

Assume further that the sample is a balanced panel, where all units are observed in the same time periods, $t = 1, \dots, T$. The complete time period can be divided into a positive number of pre-intervention periods, T_0 , as well as a positive number of post-intervention periods, T_1 , i.e. $T = T_0 + T_1$. Following from this, unit 1 is exposed to the “treatment” during the periods $T_0 + 1, \dots, T$, and the intervention has no effect during the pre-treatment period $1, \dots, T_0$.

In order to measure the effect of the “treatment” on a post-intervention outcome and bearing in mind that pre-intervention characteristics of the treated unit can often be much more accurately approximated by a combination of untreated units than by any single untreated unit, define a synthetic control as a weighted average of the units in the donor pool. Formally, a synthetic control can be represented by a $(J \times 1)$ vector of weights $W = (w_2, \dots, w_{J+1})$, where $0 \leq w_j \leq 1$ for $j = 2, \dots, J$ and $w_2 + \dots + w_{J+1} = 1$. Choosing a particular value for W is equivalent to choosing a synthetic control.

Following John Stuart Mill’s method of difference¹¹, Abadie et al. (2010, 2015) propose selecting the value of W such that the characteristics of the treated unit are best resembled by the characteristics of the synthetic control. In formal terms this comes down to the following. Let X_1 be a $(k \times 1)$ vector containing values of the treated unit’s pre-intervention characteristics that we aim to match as well as possible, and let X_0 be the $k \times J$ matrix collecting the values of the same variables for the units in the donor pool. The pre-intervention characteristics in X_1 and X_0 may also include pre-intervention values of the

¹⁰ Without loss of generality we could have multiple units affected by the event or intervention (then the method could be applied to each affected unit separately or to an aggregate of all affected units – Abadie et al. (2014)) but for the sake of clarity and because we further apply the method with a single affected unit, we present this version here.

¹¹ The so-called “Mill’s methods” are five rules for investigating causes proposed in *A System of Logic* (Mill 1843) – method of agreement, method of difference, joint method of agreement and difference, method of residues, and method of concomitant variation. In his statement of the method of difference Mill writes: “*If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance save one in common, that one occurring only in the former; the circumstance in which alone the two instances differ, is the effect, or cause, or a necessary part of the cause, of the phenomenon*” (Mill 1843, p. 455). In other words, according to the method of difference, if you have one situation that leads to an effect and another one which does not and the only difference between them is the presence of a single factor in the first situation, we can infer that this factor is the cause of the observed effect.

outcome variable. The difference between the pre-intervention characteristics of the treated unit and a synthetic control is given by the vector $X_1 - X_0W$. Now select the synthetic control, W^* , that minimizes the size of this difference. This can be operationalized in the following way, as explained by Abadie et al. (2015). For $m = 1, \dots, k$, let X_{1m} be the value of the m -th variable for the treated unit and let X_{0m} be a $(1 \times J)$ vector containing the values of the m -th variable for the units in the donor pool. Abadie and Gardeazabal (2003), as well as Abadie et al. (2010, 2015) choose W^* minimizing:

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

where v_m is a weight that reflects the relative importance assigned to the m -th variable, when measuring discrepancy between X_1 and X_0W ¹². It is crucial that the synthetic controls closely reproduce the values that variables with large predictive power on the outcome of interest take for the unit affected by the intervention (Abadie et al. 2015). Accordingly, those variables should be assigned large v_m weights. In the empirical application below, we apply a cross-validation method to choose v_m ¹³.

Having defined the synthetic control let us move to the post-intervention outcomes. Following further Abadie et al. (2010, 2015), let Y_{jt} be the outcome of unit j at time t . Additionally, let Y_1 be a $(T_1 \times 1)$ vector with the post-intervention values of the outcome for the treated unit [i.e. $Y_1 = (Y_{1\ T_0+1}, \dots, Y_{1\ T})$] and let Y_0 be a $(T_1 \times J)$ matrix, where column j contains the post-intervention values of the outcome for unit $j + 1$. The synthetic control estimator of the effect of the treatment is then given by the comparison of post-intervention outcomes between the treated unit, which is exposed to the intervention, and the synthetic control, which is not exposed to the intervention, i.e. $Y_1 - Y_0W^*$. That is, for a post-intervention period t (where $t \geq T_0$), the synthetic control estimator of the effect of the treatment is given by the comparison between the outcome for the treated unit and the outcome for the synthetic control at that period:

$$Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}. \quad (2)$$

¹² For a more formalized statement see Abadie et al. (2014, footnote 5).

¹³ In particular, in the estimations that we present further we select the fully nested optimization procedure that searches among all positive definite and diagonal V -matrices such that the mean squared prediction error (RMSPE) of the outcome variable is minimized for the pre-intervention periods.

The matching variables in X_0 and X_1 are meant to be predictors of post-intervention outcomes and are themselves not affected by the intervention.

To generalize (allowing any unit $i = 1, \dots, J + 1$ to be exposed to treatment), following the explication in Billmeier and Nannicini (2013), the treatment effect for country i at time T_0 can be defined as:

$$\tau_{it} = Y_{it}(1) - Y_{it}(0) = Y_{it} - Y_{it}(0), \quad (3)$$

where $Y_{it}(1)$ and $Y_{it}(0)$ stand for the potential outcome with and without treatment, respectively. Then the estimand of interest is the vector $(\tau_{i,T_0+1}, \dots, \tau_{i,T})$. Abadie et al. (2010) show how to identify the above treatment effects under the following general model for the potential outcomes of all units:

$$Y_{jt}(0) = \delta_t + v_{jt}, \quad (4)$$

$$Y_{jt}(1) = \tau_{jt} + \delta_t + v_{jt}, \quad (5)$$

with $j = 1, \dots, J + 1$. Given the treatment assignment mechanism described above, τ_{jt} is different from 0 only when $j = i$ and $t > T_0$. Besides the (dynamic) treatment effects τ_{jt} , potential outcomes depend on a common factor δ_t and an error v_{jt} . Assume that v_{jt} can be expressed by the following factor model,

$$v_{jt} = Z_j \theta_t + \lambda_t \mu_j + \varepsilon_{jt}, \quad (6)$$

where Z_j is a vector of relevant observed covariates that are not affected by the intervention and can be either time-invariant or time-varying, θ_t is a vector of time-specific parameters, μ_j is a country-specific unobservable, λ_t is an unknown common factor, and ε_{jt} are zero-mean transitory shocks. The j subscript to the Z vector does not impose any restriction on the covariates included in the model, which may vary with time or not and may be pre- or post-treatment, as long as they do not depend on the intervention.

3.1 Advantages of synthetic control

Comparing with traditional regression methods the synthetic control method has several advantages. The first of them is transparency. Since a synthetic control is constructed as a weighted average of the available control units, this method explicitly specifies the relative contribution of each control unit to the counterfactual of interest, as well as the similarities (or lack thereof) between the affected unit and the synthetic control, in terms of pre-intervention outcomes and other predictors of post-intervention outcomes (Abadie et al.

2010). Secondly, as the set of potential controls can be appropriately restricted to make the underlying unit comparisons more sensible, this method comes also with an advantage of flexibility (Billmeier and Nannicini 2013). Thirdly, because the weights can be restricted to be positive and sum to one, the synthetic control method provides a safeguard against extrapolation (Abadie et al. 2010). Fourthly, as indicated by Billmeier and Nannicini (2013), the synthetic control method is based on identification assumptions that are weaker than those required by estimators commonly applied in regression panel-data analysis. While panel models control only for confounding factors that are time invariant (fixed effects) or share a common trend (difference-in-difference models), the synthetic control estimation method allows the effect of unobservable confounding factors to vary in time¹⁴. Thanks to handling the (time-varying) omitted bias, the synthetic control method addresses endogeneity and, partially, the omitted variable bias¹⁵. The latter features make this method particularly attractive and relevant for researchers studying various economic effects of legal and policy interventions¹⁶.

3.2 Requirements and potential drawbacks

Several requirements must be fulfilled so as to correctly apply the synthetic control method and obtain results possessing the properties discussed above¹⁷. Firstly, since constructing the donor pool of comparison units constitutes the crucial step in the implementation of the synthetic control method, it must be given particular care. To this end three aspects are of particular significance (Abadie et al. 2015, Abadie 2015): (1) no interference between units (i.e. no spill-over effects), (2) no idiosyncratic shocks to control units, (3) similar characteristics of control units and the treated unit (to avoid extrapolation biases and overfitting). Secondly, since credibility of a synthetic control depends upon how well it tracks the treated unit's characteristics and outcomes over an extended period of time prior to the treatment, the applicability of this method requires: (1) a "sizable number" of pre-intervention periods, (2) a "sizable number" of post-intervention periods if the effect of the event or intervention emerges gradually or changes over time, (3) no anticipation effects

¹⁴ Campos et al. (2014) indicate that the synthetic control method is in this sense close to the policy-experiment approach as discussed e.g. by Henry (2007).

¹⁵ The problem of potentially omitting variables at the time of selecting the pre-treatment characteristics to be used for constructing the counterfactual however remains.

¹⁶ One should, however, bear in mind that such studies could nevertheless suffer from reverse causation if the timing of the intervention was decided by expectations regarding future outcomes (see e.g. Billmeier and Nannicini 2013).

¹⁷ Most of the requirements listed herein pertain not only to synthetic control methods but also to any other type of comparative case study research design (Abadie 2015).

(impacts of a given intervention prior to its implementation)¹⁸. Campos et al. (2014) summarize that the choice of the pre-treatment characteristics must include variables that can approximate the path of the treated unit¹⁹, while at the same time avoiding variables that anticipate the effects of the intervention. Thirdly, since synthetic control estimates are based on the idea that a combination of unaffected units can approximate the pre-intervention characteristics of the treated unit, differences in the characteristics of the affected unit and the synthetic control must be small²⁰. If the unit affected by the intervention of interest is ‘extreme’ in the value of a particular variable, such value may not be closely approximated by a synthetic control. A potential solution in such cases may be to transform the outcome level variable to its time differences or growth rates (Abadie 2015)²¹.

3.3 Making inferences with the synthetic control method

The use of statistical inference in comparative case studies raises problems because of the small-sample nature of the data, the absence of randomization, and the fact that probabilistic sampling is not employed to select sample units (Abadie et al. 2015). However, thanks to systematizing the process of estimating the counterfactuals, the synthetic control method allows to conduct falsification exercises, which Abadie et al. (2010) and the literature that draws on their work call “placebo studies”. Those tests are based on the premise that our confidence that a particular synthetic control estimate reflects the impact of the intervention under scrutiny would be severely undermined if we obtained estimated effects of similar or even greater magnitudes in cases where the intervention did not take place (Abadie et al. 2015).

Two types of such placebo tests can be carried out. The first one, called ‘in-time placebos’, consists in reassigning the intervention in time and rests on the premise that our

¹⁸ Synthetic control estimators may then be biased, if forward looking agents react in advance of the intervention of interest or if certain components of the intervention were put in place in advance of its formal implementation or enactment.

¹⁹ Abadie et al. (2014) also emphasize that it is not recommended to use the synthetic control method when the pre-treatment fit is poor.

²⁰ This requirement is also called the “convex hull condition” – for mathematical details see Abadie (2015).

²¹ One should also bear in mind that the applicability of the synthetic control method may be limited by the presence of unmeasured factors affecting the outcome variable, as well as by heterogeneity in the effects of observed and unobserved factors. However, Abadie et al. (2010) argue that if the number of pre-intervention periods is large, then matching on pre-intervention outcomes helps control for these problems. The intuition is straightforward: *“Only units that are alike in both observed and unobserved determinants of the outcome variable as well as in the effect of those determinants on the outcome variable should produce similar trajectories of the outcome variable over extended periods of time. Once it has been established that the unit representing the case of interest and the synthetic control unit have similar behavior over extended periods of time prior to the intervention, a discrepancy in the outcome variable following the intervention is interpreted as produced by the intervention itself”* (Abadie et al. 2014, p. 4).

confidence about the validity of a result estimating a sizable effect for a certain intervention of interest would dissipate if the synthetic control method also estimated large effects when applied to dates when the intervention did not occur (Heckman and Hotz 1989). The second type of placebo tests involves reassigning the intervention to other units – members of the donor pool. Such tests are referred to as ‘in-space placebos’ (Abadie et al. 2015). Here the premise is that our confidence that a sizable synthetic control estimate reflects the effect of the intervention would disappear if similar or larger estimates arose when the intervention was artificially reassigned to units not directly exposed to it. Such tests are usually implemented so that placebo effects are estimated for every potential control unit in the donor pool leading to the creation of a distribution of placebo effects, against which the effect estimated for the unit that represents the case of interest can be evaluated.

Campos et al. (2014) extend the scope of inference tests available for synthetic control studies by proposing the use of a difference-in-difference estimator for the actual vis-à-vis the synthetic series allowing to draw conclusions on the statistical significance of their differential (i.e. average pre- and post-treatment values). In our study performed in the subsequent sections we employ both the placebo (‘in-space’) tests proposed by Abadie et al. (2010, 2015), as well as the additional inference tests introduced by Campos et al. (2014).

3.4 Selected applications of the synthetic control method

In recent years this method has been increasingly applied to study legal-economic and political-economic contexts. An early account was Abadie and Gardeazabal (2003), who focused on the economic impact of political conflict based on the terrorist conflict in the Basque Country. Several years later Abadie et al. (2010) developed this approach further and applied it to study the effect of a large-scale tobacco control program on cigarette consumption in the American state of California. Since 2010 the synthetic control method has been applied in studies of economic consequences of other large-scale events such as natural catastrophes (e.g. Cavallo et al. 2010, Barone and Mocetti 2014) or political conflicts (e.g. Bove et al. 2014 and Costalli et al. 2014 – on civil wars; Bove and Nisticò 2014 – on coups d’état; Acemoglu et al. 2014 – on Egypt’s Arab Spring), as well as in studies focusing on effects of different legal and policy interventions (e.g. Bohn et al. 2014, Heim and Lurie 2014, Baum and Ruhn 2013, Doerrenberg and Peichl 2014). Abadie et al. (2015) use the synthetic control method to estimate the economic impact of the 1990 German reunification on West Germany, while Billmeier and Nannicini (2013) – to investigate the impact of economic

liberalization on real GDP per capita. Campos and Kinoshika (2010) study the effect of various structural reforms (in particular, financial liberalization) on foreign direct investment in Latin American and post-socialist transition countries for the period 1989-2004. Pieters et al. (2014) study the effect of a political regime transition (democratization) on food security and child mortality. Finally, Campos et al. (2014) focus on the economic benefits stemming from economic and political integration within the European Union, revealing, generally, positive effects of EU membership.

The studies listed above reveal the broad potential of application of the synthetic control method to analyze effects of legal interventions and political events on economic outcomes in cases where comparative case study methods are more suitable than large cross-sectional econometric studies. As mentioned in the previous sections, some of them also bring forward methodological contributions, supplementing and extending the synthetic controls method in a way allowing for more explanative power or addressing additional research questions and hypotheses. We employ some of those extensions in our study of the effect of constitutions on economic reforms in post-socialist countries.

4 Estimating the Effects of Post-Socialist Constitutions with the Synthetic Control Method

4.1 Study design

In this section we apply the synthetic control method to study the effect of adopting new constitutions in post-socialist countries on their performance in the field of economic reforms, aiming to verify, as well as potentially strengthen and extend, the results of earlier panel-data regression-based studies of this topic. If we obtain similar results, this can be seen as a powerful robustness check. Moreover, with this method we are able to study the potential significance of the constitutional framework for performance in the field of economic reforms for each post-socialist country separately, what could have earlier been done only in relation to groups of countries.

The outcome variable of interest is the aggregated transition indicator, also called the index of economic reforms (*econ_reform*), constituting an average of a set of indicators of structural economic reforms, published annually by the European Bank for Reconstruction and Development in subsequent issues of *Transition Report* (EBRD, 1994-2013). The

following categories of reforms are included: privatization and enterprise restructuring (three indicators: large-scale privatization; small-scale privatization; governance and enterprise restructuring), as well as market liberalization and competition (three indicators: price liberalization; trade and foreign exchange system; competition policy)²².

The first step of our study consists of the following: In order to study the effect that adopting the constitution by a given post-socialist country (say, Country A) has on its economic reforms process, using the techniques described in Section 3, we construct a synthetic Country A that mirrors the values of the independent variables explaining the economic reforms performance in Country A before the adoption of the constitution. All of the remaining post-socialist countries (i.e. save Country A) serve as the donor pool allowing to construct a synthetic Country A. We then estimate the effect of adopting the constitution on Country A's performance in economic reforms as the difference in performance levels between the actual Country A and its synthetic version in the time period following the adoption of the constitution.

Our choice of pre-treatment characteristics is based upon the specification used in the earlier panel data studies of the economic effects of constitutions on post-socialist reforms (Metelska-Szaniawska 2009, 2014), which are in turn based on earlier studies of the determinants of successful economic reforms in transition (e.g. de Melo et al. 2001, Falcetti et al. 2002, Falcetti et al. 2005, Fish 1998). To be specific, they include the initial conditions for undertaking reforms [variable name: *IC*, as measured by the initial conditions index calculated from the first principal component of a factor analysis over 11 indicators, stemming from Falcetti et al. (2002)], the result of the first post-socialist elections [variable name: *elections*, an indicator taken from Fish (1998)], as well as lagged reform variables to account for the fact that past performance significantly influences actual performance in post-socialist economic reforms^{23,24}. The model operates in transition time beginning in 1989 for Poland and

²² Employing progress in economic reforms, not indicators of economic performance such as GDP growth, as the dependent variable in the study allows us to focus on the influence of constitutional variables directly on the decision-making by governments in the field of (economic) policy, as suggested by the theory.

²³ Abadie et al. (2010) also use lagged dependent variables in their application of the synthetic control method.

²⁴ Estimations have also been conducted including (lagged) economic growth as an additional independent variable. The inclusion of this variable has however led to a significant decrease in the sample size (down to 13 countries) due to two reasons. Firstly, some countries had to be excluded from the analysis as growth data for their early years of transition is of limited availability and/or reliability. Secondly, with the lag of the growth variable included in the analysis the first year of transition time has to be excluded, what led to an even further decrease in the number of countries encompassed by the analysis (countries, which adopted their constitutions in the first year of their economic transition, could no longer be included). The general conclusions from this analysis do not diverge from those obtained for estimation not including the growth variable, therefore we refrain from presenting them here, putting more emphasis on the results based on the significantly larger sample size.

Hungary, 1990 – for other Central and Southeastern European countries (except Albania), 1991 – for Albania and the Baltic republics, and 1992 – for remaining former Soviet republics. This allows to account for the fact that transition started at different times in different countries²⁵.

Several comments and reservations regarding the study design presented above should be made at this point.

Firstly, since the donor pool must be restricted to units with similar characteristics to the unit exposed to the intervention, for each country under examination we construct the donor pool as consisting of all remaining post-socialist countries within the sample. There exists a rather undisputed consensus among transition scholars that the broad-scale institutional change that took place in post-socialist countries of Europe and Asia (involving several dimensions – political, economic, legal, social, etc.) was unprecedented and unique in world history. Therefore, it would not be possible to study the potential significance of constitutions for economic reforms undertaken during post-socialist transition for any other group of countries²⁶ (or it would render meaningless results).

Secondly, however, one must bear in mind, that the above approach requires that outcomes of the untreated units (reforms in countries included in the donor pool) are not affected by the intervention (constitution) implemented in the treated unit (i.e. country under examination). In other words, we treat each constitution, understood as a complete and comprehensive constitutional rule-framework for a given country, as a distinct “intervention”. This implies that a given constitution (potentially) influences the economic reforms process only in the state, where it is enacted (in other words, there are no spill-over effects to other post-socialist countries). Given such approach, in order to study a given country from the sample we are able to construct the donor pool consisting of the remaining post-socialist countries of Europe and Asia.

A third remark concerns the fact that our baseline study, as explained so far, concentrates on constitutions in their entirety, not on specific constitutional rules or their detailed provisions. If one analyzed the effects of specific constitutional rules or regulations,

²⁵ By construction the synthetic control method applied to the model operating in transition time does not allow for the simple inclusion of the stand-alone transition time variable among the independent variables. We have also conducted estimations for the model operating in calendar time. The results are available from the author upon request.

²⁶ A more technical wording of this argument would be that the transition indicators, measuring the performance of countries in the field of various economic reforms, used in the empirical study presented in this paper, are only available for this group of countries (for the time period under analysis).

they could be the same or very similar for several countries, what would make applying the synthetic control method inadequate. In order to circumvent this problem, our approach consists of two parts – studying the effect of the constitution as a whole first, and the specific determinants of its magnitude, reflecting *inter alia* the content of these constitutions, as a second step.

Finally, regarding the time dimension of the study: In order to rule out the potential anticipation effects operating in the period before entrance into force of the given constitutions we take the treatment period to be the year when a given constitution was adopted. The post-treatment period is in most cases significantly longer than the pre-treatment one (encompassing usually more than 15 years), what makes it justifiable to study the potential gradual, spread over time effects of constitutions on economic reforms. The relatively shorter pre-treatment period is a shortcoming, which is inherent in the analysis presented in this paper, as its starting period is the beginning of post-socialist economic reforms.

In the second part of the study we perform a series of placebo tests aiming to find whether the estimated treatment effects for the subsequent post-socialist countries are unusually large comparing to the distribution of the estimates that we obtain when the same treatment is applied to the countries in the donor pool. We then further evaluate the gap in various ways, taking as a starting point the approach developed by Campos et al. (2014) to analyze the growth (in our case: reform) dividends. Finally, we embark on an attempt to explain the magnitude of the reform dividends. We look for explanations in the constitutions themselves (i.e. formal and factual constitutional rules pertaining to structure of the state power, the constitutional rights and freedoms, constitutional enforcement mechanisms), as well as the environment within which the constitutions operate (in particular, the informal institutional framework). We explain the technical details of subsequent steps taken along the discussion of the results in section 4.3.

The study covers 20 countries²⁷ for the time period 1989-2012. Due to the balanced panel requirement, for countries where transition time lasted more than 21 years, the final

²⁷ These are countries enumerated in footnote 2, except for: Bosnia and Herzegovina, the Czech Republic, Montenegro, and Serbia (due to unavailable data for some variables); Croatia, Latvia, and Uzbekistan (due to adopting constitutions before or in the year when transition began, rendering the pre-treatment period too short or non-existent); as well as Hungary (due to adopting the constitution very late, outside of the time period of analysis – see next footnote). The design of the study allows, however, for inclusion of the latter four countries within the donor pool.

years of transition are not included²⁸. The data sources for the dependent and independent variables are presented in detail in Appendix 2. For the baseline estimations and construction of the placebo tests we use the Stata *synth* software as provided by Abadie et al. (2011, rev. 2014).

4.2 Baseline results (country studies)

Figure 1 in Appendix 1 presents the results of baseline estimations using the synthetic control method²⁹. Two series are plotted in this figure for each post-socialist country under examination. The series represented by the continuous line shows the actual economic reforms performance of a country, while the series represented by the dashed line shows the estimated synthetic counterfactual. The question underlying each of such exercises is, what would have been the performance in economic reforms by the given country had it not adopted the constitution (that it actually did adopt).

Take, for illustration, the case of Azerbaijan. The solid line in Figure 1 shows the evolution of the transition indicator for this country between the 1st and 21st year of transition (in this case in the period 1992-2012). The post-socialist constitution was adopted in this country in 1995, so this year marks the treatment period (vertical line). The dashed line presents synthetic Azerbaijan's performance in economic reforms, i.e. assuming it did not adopt the constitution. The optimal weights for synthetic Azerbaijan constructed on the basis of the donor pool, as explained earlier, are: 0.614 for Tajikistan, 0.368 for Turkmenistan, and 0.018 for Uzbekistan (and 0 for all other countries in the donor pool). A comparison of the evolution of both lines in Figure 1 suggests that performance in economic reforms in Azerbaijan would have been considerably lower in 2012 (and every other year in the period 1996-2012) had it not adopted the constitution in 1995. Before 1995 the series for actual and synthetic Azerbaijan move closely together, while following 1995 they diverge and the gap between actual and synthetic values seems to be nearly constant (with some slight

²⁸ Because of the balanced panel requirement, the entire period under analysis must be the same (in transition years) for each country. Given that 2012 is the last year for which the data are available, the shortest transition period in the sample is for former Soviet republics (excluding the Baltics), where transition time begins in 1992 and the studied period is 1992-2012 (21 years). Therefore, for other countries in the sample the period under analysis must also be limited to 21 years from the outset of transition. For those, where transition time started as early as 1989 (Hungary and Poland) this results in restricting the time period under analysis up to 2009. This is, as a matter of fact, also the reason for the necessity to exclude Hungary from the analysis due to the late adoption of the constitution in this country (2011). Hungary is nevertheless included in the donor pool.

²⁹ Detailed tables reporting the weights attributed to countries from the donor pool for the construction of each synthetic country under examination, as well as the pre-treatment characteristics for each actual and synthetic country, are available from the author upon request.

convergence in the most recent years) suggesting permanent, not just temporary, benefits from the constitution for economic reforms.

Positive effects of adopting constitutions for performance in terms of economic reforms are identified in a similar way for most of the other post-socialist countries. Specifically, this is the case for the remaining former Soviet Republics in the Caucasus (Armenia, Georgia), the Baltic republics (Estonia, Lithuania)³⁰, Southeast Europe (Bulgaria, Macedonia, Romania, Slovenia)³¹, as well as Kazakhstan, Slovakia, and Ukraine. The scale of these effects differs between countries, with the largest benefits for Georgia (reaching nearly the value of 1 on the transition indicator) and the smallest ones for Kazakhstan, Macedonia, and Slovakia. In most of these countries the benefits remain relatively stable, with a different pattern in Slovenia (negative effects at the beginning of the post-treatment period and positive later), Macedonia (negative or negligible effects until ca. the 13th year of transition and positive afterwards), Armenia (significant drop in benefits rendering the gap inexistent around the 9th year of transition and positive effects thereafter) and Kazakhstan (decreasing positive effects throughout the transition period).

Negative effects are revealed for a much smaller group of countries, i.e. Albania, Belarus, Moldova, Russia, and Tajikistan³². The scale of the effects varies again. While for Albania, Moldova, and Tajikistan they are fairly small, for Belarus they reach nearly 1 point on the transition indicator. The results for Russia should be treated with caution as the pre-treatment fit is questionable ($\text{RMSPE} = 0.333$)³³. It is notable that for Belarus the negative effects dramatically increase 1-2 years after the constitution was adopted suggesting that the revision of the constitution following the referendum organized on President Lukashenko's initiative in 1996, leading to the reversal of democratization in this country and strengthening of the president's position within the state, could have been a meaningful factor in this respect.

Finally, the effects of adopting constitutions on post-socialist reforms seem negligible in two countries – Kyrgyzstan³⁴ and Poland. For the latter country this result holds for the

³⁰ As explained earlier, Latvia is excluded from the analysis. However, in the additional estimations, which we conducted for the model working in calendar time, Latvia followed a similar pattern (with positive effects).

³¹ For Croatia in the model working in calendar time we obtained relatively small but positive effects.

³² We refrain from discussing the case of Turkmenistan, because the pre-treatment fit for this country is poor ($\text{RMSPE} = 0.439$).

³³ Given Russia's uniqueness, it seems reasonable that it is difficult to closely "reproduce" it by mixing the characteristics of other post-socialist countries.

³⁴ No matter which constitution adopted by Kyrgyzstan we consider.

entire period of transition, while Kyrgyzstan experienced some positive effects in the first years of transition.

The baseline results presented above suggest considerable variation in the effects of adopting constitutions in post-socialist countries on their performance in economic reforms, while at the same time demonstrating the effectiveness of the synthetic control method in revealing them. In the next section we undertake a further evaluation of these results, assessing the potential significance of the effects and aiming to explain the determinants thereof.

4.3 Evaluating and explaining the reform gaps

In this section we undertake the following tasks. Firstly, we conduct a series of “conventional” placebo tests, as proposed by Abadie et al. (2010), to draw preliminary conclusions about the significance of the constitutions’ effects on economic reforms identified in the previous section. Secondly, we supplement and verify these conclusions using the difference-in-difference approach as proposed by Campos et al. (2014). Thirdly, we study the determinants of the gap between actual and synthetic post-socialist countries in terms of performance in the field of economic reforms, looking at particular characteristics of their constitutions, as well as the broader institutional framework within which the constitutions operate.

To evaluate the significance of the estimates obtained in the previous section, following Abadie et al. (2010), we pose the question, whether our results could be driven entirely by chance, i.e. how often would we obtain results of this magnitude if we had chosen a state at random for the study instead of the given treated unit? To answer this question, we conduct a series of placebo studies by iteratively applying the synthetic control method used to estimate the effect of the constitution adopted in a given state to every other country in the donor pool (moving the treated state to the donor pool). If for a given country the placebo studies show that the gap estimated for the treated unit is unusually large relative to the gaps revealed when subjecting states from the donor pool to the same treatment, then the interpretation is that the analysis presented so far provides significant evidence of the effects of adopting a constitution by a country on its performance in terms of economic reforms.

Figure 2 in Appendix 1 presents the results of the placebo tests. For each treated country, the thin, colored lines represent the gap associated with subsequent countries in the donor pool subjected to the treatment and their respective synthetic versions. The thicker

black line denotes the gap estimated for the treated country. The figure reveals mixed conclusions. While in many cases the effect on economic reforms for the treated country is relatively large (as compared to the other countries), its magnitude is hardly ever largest in the studied group of countries. It should, however, be noted that in some donor countries the pre-treatment mismatch is significant, nevertheless even after removing countries with the pre-treatment RMSPE 20 or 5 times higher than for the given treated country, only for two states – Albania and Belarus, the magnitude of the effect can be considered “unusually large”³⁵.

We supplement this analysis with inference tests proposed by Campos et al. (2014) consisting in difference-in-difference estimations for the actual and synthetic series for each post-socialist country and check the statistical significance of their differential. Specifically, we assess the significance of the difference in the outcome variable (reform performance) between the average pre-treatment (i.e. prior to the adoption of the constitution) difference (between the actual and synthetic country) and the average post-treatment difference (between the actual and synthetic country). The fact that we are looking at averages may result in producing conservative results as statistical significance may be more difficult to attain for those countries, which experience a gap between the actual and synthetic outcome variable series which is not constant over time in the post-treatment period (Campos et al. 2014).

Table 2 reports the results of these estimations. They reveal that the differences between the actual and synthetic outcome variable series, associated with the adoption of the post-socialist constitutions, are noticeable for several countries (i.e. statistically significantly different from 0). This is the case for: Central-Asian former Soviet republics, i.e. Armenia (only at the 10% significance level, however), Azerbaijan, and Georgia; the Baltic republics, i.e. Estonia and Lithuania; as well as Bulgaria, Kazakhstan (at the 10% level), Moldova, Romania (at the 10% level), Slovenia (at the 10% level), and Ukraine. For these countries the estimated differential is positive. For Belarus and Russia the differential is significant and negative. These results are to a large extent coherent with the conclusions of the baseline synthetic control study and extend them by allowing to make statements about the statistical significance of the identified effects³⁶. The differences concern, in particular, Macedonia and Moldova and can be explained by the fact that averaging the post-treatment effect leads in

³⁵ The relevant graphs for placebo tests with some countries removed due to high pre-treatment RMSPE (two threshold values have been set, as in Abadie et al. 2010 – 20 and 5 times higher RMSPE) are available from the author upon request.

³⁶ For a discussion of limitations of the conclusions based on difference-in-difference estimations see Bertrand et al. (2004).

Table 2 Difference-in-Difference estimates of the effect of constitutions

Country name	DiD estimate	Standard error	Adjusted R ²	Number of observations
Albania	-0.300	0.336	0.669	42
Armenia	0.196*	0.106	0.784	42
Azerbaijan	0.528***	0.110	0.800	42
Belarus	-0.789***	0.245	0.814	42
Bulgaria	0.310**	0.155	0.461	42
Estonia	0.709***	0.146	0.607	42
Georgia	0.685***	0.125	0.868	42
Kazakhstan	0.390*	0.202	0.880	42
Kyrgystan	0.170	0.104	0.522	42
Lithuania	0.590***	0.144	0.585	42
Macedonia	-0.025	0.118	0.328	42
Moldova	0.559***	0.204	0.879	42
Poland	-0.036	0.363	0.508	42
Romania	0.265*	0.156	0.463	42
Russia	-0.464***	0.109	0.342	42
Slovenia	0.213*	0.120	0.394	42
Slovakia	0.403	0.698	0.677	42
Tajikistan	-0.093	0.126	0.534	42
Turkmenistan	-0.103	0.081	0.636	42
Ukraine	0.731**	0.367	0.778	42
All countries	0.312***	0.116	0.391	840

* Significant at a 10% level, ** Significant at a 5% level. *** Significant at a 1% level.

Source: Author's calculations.

both of these countries to obtaining a different sign from the effect in the final part of the post-treatment period.

We can now move to the final part of the analysis presented in this paper aiming to explain the variety in the effects that the adoption of post-socialist constitutions had on economic reforms in different post-socialist countries, as presented in detail above. We first calculate what could be called “reform dividends” i.e. the benefits in terms of performance in economic reforms associated with the adoption of post-socialist constitutions. They are equivalent to the magnitude of the gap between the actual and synthetic outcome variable series obtained in the previous parts of the analysis. We calculate those gaps not only for the entire post-treatment period for each post-socialist country but also for the first 5 and 10 years after the adoption of the constitution, so as to capture the potential general dynamics.

The reform dividends, calculated in % terms, are presented in Table 3. The table reveals considerable variety, both of positive and negative values. The highest positive values are attained by Ukraine (an increasing tendency with a 31.31% reform dividend on average over the complete period after adoption of the constitution, i.e. in 1996-2012) and Georgia (relatively stable benefits throughout the post-treatment period reaching 27.42% reform dividends on average for the 10-year period following the adoption of the constitution, i.e. 1995-2004). Slightly lower but still relatively high dividends are obtained for Estonia (stable throughout the post-treatment period at an average level of 23-24%), Azerbaijan (increasing tendency on average, reaching 23,66% for the complete post-treatment period), Moldova (with an average of 21-22%), Lithuania (18-21%), and Slovakia (decreasing tendency on average, reaching 28.05% in the first 5-years after adoption of the constitution and only 18,79% on average throughout the entire post-treatment period, i.e. 1992-2010³⁷). On the other extreme we once again find Belarus (negative reform dividends reaching -21.28% on average in the first 5 years after adopting the 1994 constitution and as much as -28.86% on average throughout the entire post-treatment period, i.e. 1994-2012). Considerable negative benefits are also obtained for Russia (with a noticeable decreasing tendency from only -2.10% on average in the first 5 years after adopting the constitution to as much as -19.86% on average for the entire post-treatment period, i.e. 1993-2012). Relatively stable negative benefits oscillating on average at the level of ca. -8% are found for Albania, while smallest

³⁷ As mentioned earlier, because of the balanced panel requirement, the entire period under analysis amounts to 21 transition years for each country, implicating the period 1990-2010 for Slovakia.

Table 3 Reform dividends (in %)

Country name	5-year post-treatment period	10-year post-treatment period	Complete post-treatment period
Albania	-8.00	-8.31	-8.05
Armenia	3.96	4.06	6.52
Azerbaijan	17.42	22.21	23.66
Belarus	-21.28	-28.47	-28.86
Bulgaria	2.98	4.93	10.48
Estonia	24.20	23.66	23.37
Georgia	26.03	27.42	26.08
Kazakhstan	21.05	18.23	14.73
Kyrgyzstan	14.29	10.10	6.06
Lithuania	21.26	18.75	20.20
Macedonia	-10.74	-5.86	-1.22
Moldova	21.93	22.22	22.07
Poland	-1.57	-1.72	-1.75
Romania	-11.60	-1.08	8.35
Russia	-2.10	-13.90	-19.86
Slovenia	-2.78	4.24	6.45
Slovakia	28.05	22.37	18.79
Tajikistan	-9.35	-4.27	-3.73
Turkmenistan	-1.97	-	-1.97
Ukraine	23.41	28.84	31.31

Source: Author's calculations.

(slightly negative) dividends are experienced for Poland (-1.75% on average throughout the entire post-treatment period, i.e. 1997-2009) and Turkmenistan (-1.97% on average for the period 2008-2012³⁸). It is noticeable that for some countries there are considerable dynamics in the average reform dividends following the adoption of their constitutions, e.g.: positive and increasing in size in Armenia, Azerbaijan, Bulgaria and Ukraine; positive and decreasing in size in Kazakhstan, Kyrgyzstan and Slovakia; negative and decreasing in size in Macedonia and Tajikistan; and negative and increasing in size in Belarus and Russia. For Romania and Slovenia the benefits start on average negative and then turn positive with an increasing tendency.

We now use these values for the final estimations searching for determinants of those dividends. We treat them (or, specifically, the annual dividends, varying year by year, not averaged values) as dependent variables in estimations employing various specifications and techniques of analysis. From the point of view of the focus in this paper and bearing in mind that these dividends have been calculated based on the synthetic counterfactuals of countries obtained using a set of pre-treatment characteristics (see equation 6 in section 3), including the initial conditions for reform and the result of the initial post-socialist elections, two categories of variables can be identified as potentially explaining the time- and country-variation in these dividends: factors relating to the actual content and characteristics of the adopted constitutions (generally, factors relating to the constitutional framework), as well as factors determining the characteristics of the framework within which these constitutions operate (in particular, the informal institutional framework).

In the study presented here we include both types of determinants and their selection is based on earlier studies of the link between constitutions and the post-socialist economic reforms process mentioned in Section 2 (Metelska-Szaniawska 2009, 2014). The first group is the set of constitutional variables including the *de facto* measure of the concentration of power within the state [variable name: *concentration*; calculated based on the political constraints index originating from Henisz (2000, 2002, 2013); taking the value of 0 for least concentrated and 1 for most concentrated power], the *de facto* measure of constitutional rights and freedoms [variable name: *rights*; based on the Freedom House (1990-2013) political rights and civil liberties indices; calculated so as to take values between 0 and 1, with 1 for the

³⁸ As we are only able to study the second post-socialist constitution of Turkmenistan (since the first one was adopted in 1992, i.e. the first year of transition time) and this second constitution was adopted in 2008, the period 2008-2012 is both the 5-year post-treatment period and the complete post-treatment period for this country. See also footnote 33.

broadest scope of the functioning bill of rights], as well as two measures of constitutional court independence – *de jure* and *de facto* [variable names: *de jure CCI* and *de facto CCI*; based on *de jure* and *de facto* judicial independence indicators proposed by Voigt et al. (2015)]. The second group is represented by a measure of trust within the society. For more detailed descriptions of variables and their data sources see Appendix 2. Expecting considerable inertia in reform dividends (gaps) we also include the lagged gap variable in the regressions.

Table 4 presents the relevant results for various specifications and relevant estimation techniques (OLS with robust standard errors, pooled OLS, FE, RE). The signs of the coefficients corresponding to the constitutional variables are all as expected based on the negative constitutionalists' approach to the role of constitutions for post-socialist transition in Europe and Asia, emphasizing the constitution's function as a commitment mechanism for successful performance in the field of economic reforms required by this process (see Section 2). However, only one constitutional variable retains significance throughout all estimations, where is it included – namely *de facto CCI*. At the same time *de jure CCI* is insignificant in all columns of the table. The results for concentration of power and rights are not as convincing since the significance of these variables is sensitive to changes in the studied specifications (while *rights* are significant only in the first two columns of Table 4, *concentration* is significant only in the last one).

These findings, as they are, confirm the theoretical argumentation based on the credible commitment role attributed to the constitution in the post-socialist transition process, however not its most straightforward aspect, i.e. not the extent to which power in the state is *de facto* (de-)concentrated (based on structural provisions or, indirectly, via the limitations on state power imposed by granting broad catalogues of rights and freedoms to the citizens), but rather by ensuring the effectiveness of the last stage in turning promises made by state power into credible commitments, i.e. *de facto* independence of the constitutional judiciary. In addition, the results presented in the last two columns confirm that the role of the informal institutional framework within which constitutions operate in countries should also certainly not be neglected. As expected, evidence is found of inertia in reform dividends (gaps) based on significant positive coefficients for the lagged gap variable in all regressions.

Table 4 Explaining the reform dividends – estimation results
Dependent variable: *reform_gap_{it}*

Independent variables	Coefficients			
	<i>only concentration and rights</i>		<i>including CCI</i>	<i>including trust</i>
	I OLS / RE [†]	II FE	III OLS / RE [†]	IV OLS / RE [†]
<i>concentration_{it}</i>	-1.610	-2.809	-2.887	-5.702**
<i>rights_{it}</i>	0.483*	2.210***	0.487	0.453
<i>CCI_dejure_i</i>	-	-	-0.836	-0.779
<i>CCI_defacto_i</i>	-	-	4.066**	3.378*
<i>reform_gap_{i,t-1}</i>	0.892***	0.642***	0.873***	0.857***
<i>trust</i>	-	-	-	18.449***
<i>constant</i>	0.481	-3.053	-0.768	-3.418
<i>R</i> ²	0.842	0.791	0.835	0.851
<i>F</i> -stat. / χ^2 -stat.	684.65 / 2115.84	165.63	464.11 / 1796.14	393.88 / 1791.42
Number of obs.	400	400	360	320
N. of countries	20	20	18	16

* Significant at a 10% level, ** Significant at a 5% level. *** Significant at a 1% level.

[†] Identical coefficients for OLS (robust) and RE estimations, as well as for pooled OLS.

Source: Author's calculations.

5 Conclusions

In this paper we attempted to reassess the relevance of the constitutional framework for performance in the area of economic reforms by post-socialist countries of Europe and Asia after 1989, using the novel synthetic control method. The obtained results constitute a partial confirmation of the main line of conclusions from earlier regression studies of this topic, but also their enrichment. Firstly, our findings allow to settle that we cannot speak of an overall negative or positive significant effect of concentration of power on economic reforms in the entire sample of post-socialist countries. Secondly, they reveal that constitutional rights and freedoms may also not be the crucial channel either. What comes out of this study as the

most vital component of the constitutional framework for economic reforms in post-socialist transition is *de facto* constitutional court independence. The latter reflects the essence of the commitment-enhancing role of the constitution for the economic reform process in post-socialist countries since constitutional court independence is obviously an important constraint on power, while at the same time being a vital instrument allowing for effective enforcement of constitutional rights. This conclusion allows to build a bridge between studies explaining the process of post-socialist economic reforms with particular emphasis on the influence of political and institutional determinants in this respect (most recently see Hare and Turley 2013, as well as Aslund and Djankov 2014) and literature on the economic consequences of an independent judiciary (most recently Voigt et al. 2015).

The study presented in this paper delivers not only interesting conclusions but also demonstrates the potential of the synthetic control method, as a method allowing to study causal inference in comparative case studies, for future analyses in the area of constitutional economics, constitutional law and economics and related fields. This method, being in a way an extension of the difference-in-difference regression framework, provides a bridge between quantitative and qualitative studies in comparative politics (Abadie et al. 2015), economics, and in particular at the junction of the two, i.e. in the field of political economy. While large cross-country studies are often not internally valid because of lacking common support, comparative case studies have the feature of being internally valid, but they often cannot be generalized (Pieters et al. 2014). The synthetic control method succeeds in producing results which are both internally valid (thanks to the specific construction of the counterfactual which allows for good common support) as well as externally valid (thanks to the generalization of results based on tests conducted for large set of units). In this way it allows for “[p]utting qualitative flesh on quantitative bones” (Tarrow 1995, p. 473).

Note: For a more extensive version of this study see: Metelska-Szaniawska K. (2016), *Economic Effects of Post-Socialist Constitutions 25 Years from the Outset of Transition. The Constitutional Political Economy Approach*, Frankfurt am Main: Peter Lang Internationaler Verlag der Wissenschaften, forthcoming.

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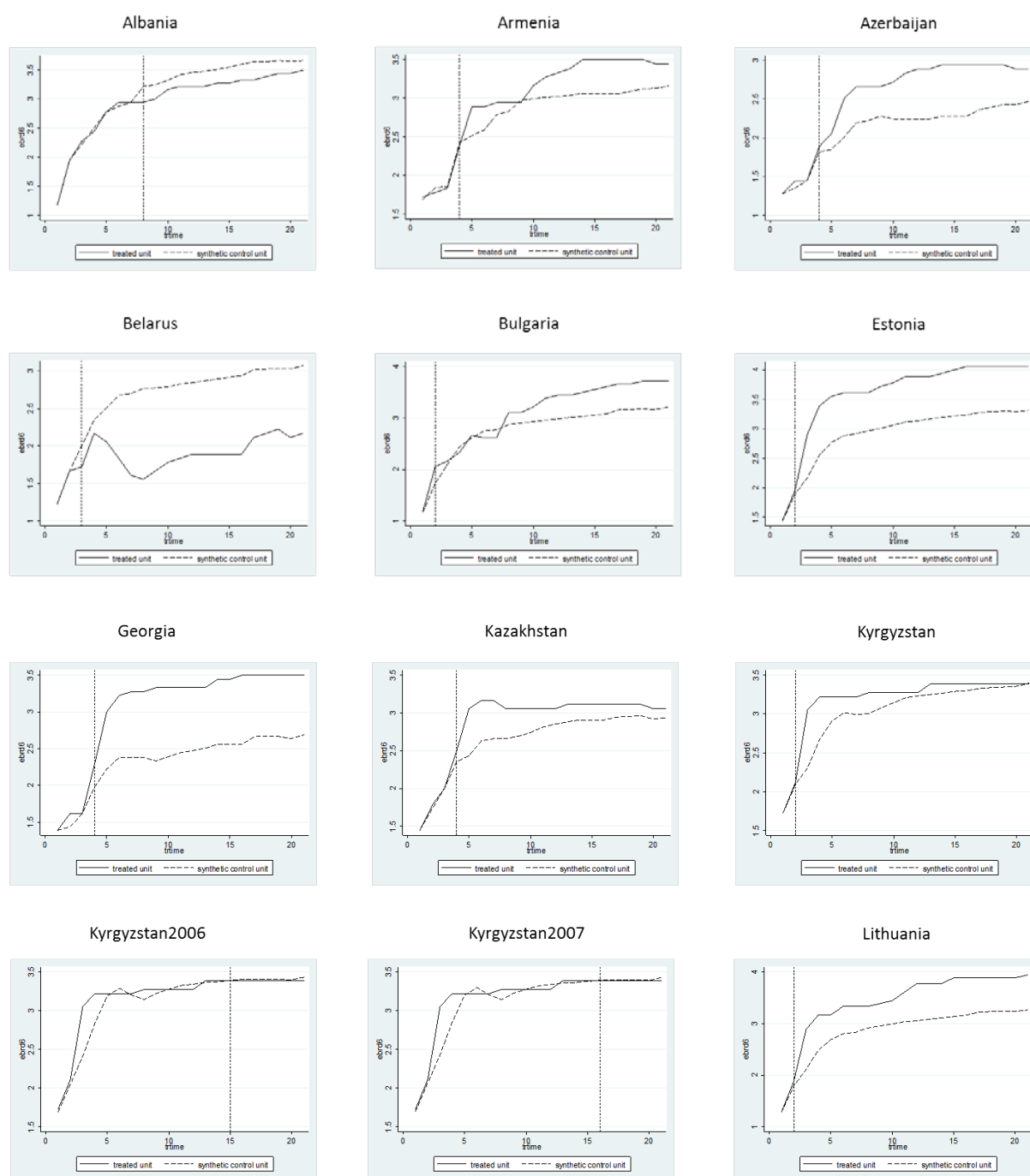
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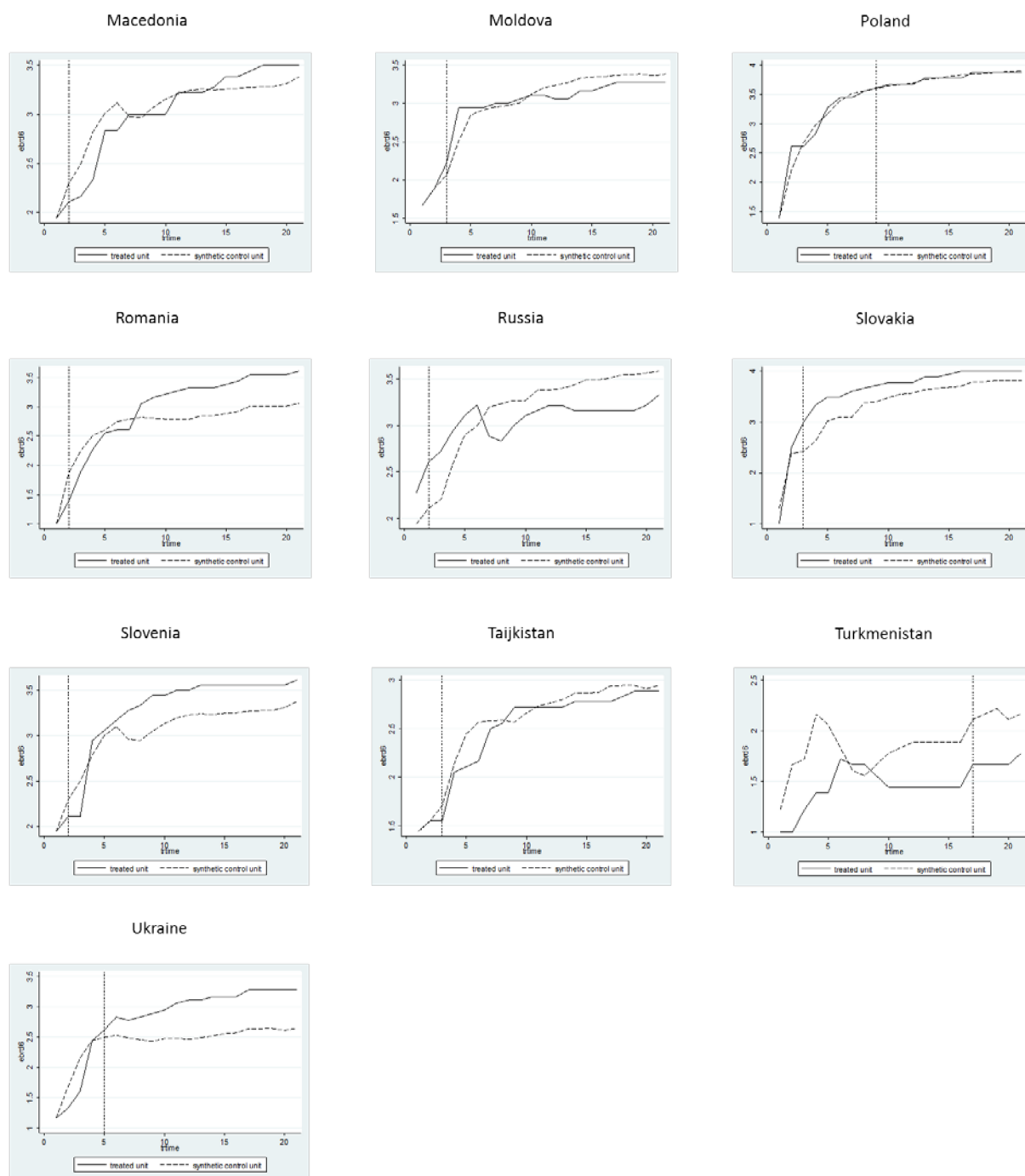
Appendix 1 FIGURES

Figure 1 Baseline synthetic control estimates for subsequent post-socialist countries



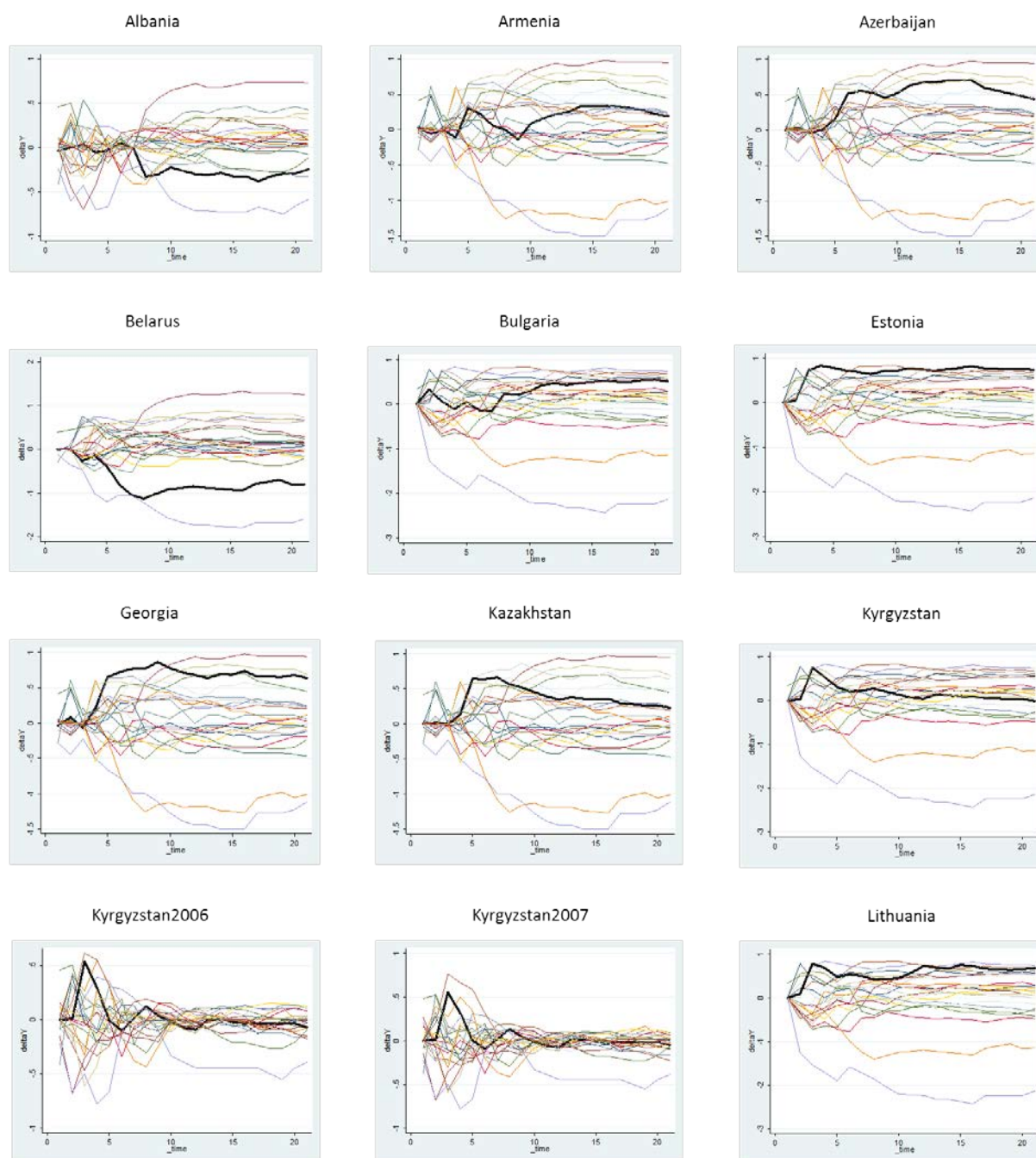
Source: Author's calculations and graphs.

Figure 1 Baseline synthetic control estimates for subsequent post-socialist countries (contd.)



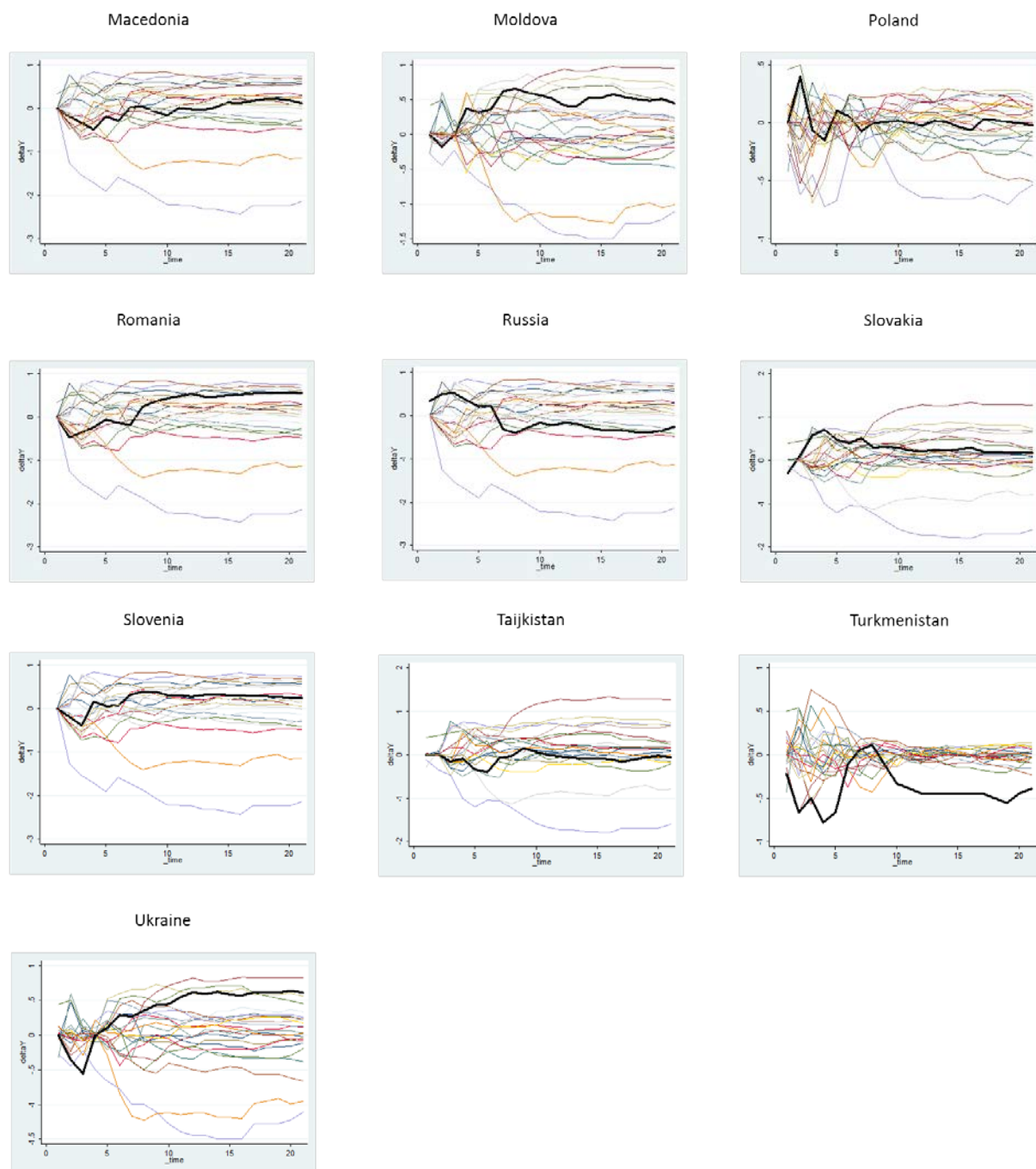
Source: Author's calculations and graphs.

Figure 2 Placebo tests results for subsequent post-socialist countries



Source: Author's calculations and graphs.

Figure 2 Placebo tests results for subsequent post-socialist countries (contd.)



Source: Author's calculations and graphs.

Appendix 2 DESCRIPTION OF VARIABLES AND DATA SOURCES

Variable name	Description	Data source
<i>CCI_defacto</i>	<i>De facto</i> constitutional court independence indicator	Voigt et al. (2015)
<i>CCI_dejure</i>	Formal constitutional court independence indicator	Voigt et al. (2015)
<i>concentration</i>	Concentration of state power index reflecting the extent to which a single political actor is capable of decisively influencing state policy	Author's calculations based on Henisz (2013)
<i>econ_reform</i>	Aggregate transition indicator (index of economic reforms) constituting an average of a set of six indicators of structural economic reforms	Author's calculations based on EBRD (1994-2013)
<i>elections</i>	An indicator reflecting the result of the initial post-socialist elections in a country, including some aspects of their organization (variable used for obtaining synthetic counterfactuals)	Fish (1998)
<i>IC</i>	Initial conditions index calculated from the first principal component of a factor analysis over 11 indicators (variable used for obtaining synthetic counterfactuals)	Author's calculations based on Falcetti et al. (2002)
<i>rights</i>	Constitutional rights indicator reflecting the operative political rights and civil liberties	Author's calculations based on Freedom House (1990-2013)
<i>trtime</i>	Transition time beginning in 1989 for Poland and Hungary, 1990 – for other Central and Southeastern European countries (except Albania), 1991 – for Albania and the Baltic republics, and 1992 – for remaining former Soviet republics (variable used for obtaining synthetic counterfactuals)	-
<i>trust</i>	A measure of trust between individuals and in their relation with political institutions of the state (proxy for civil society)	Author's calculations based on World Values Survey (1994-1999)



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