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# On the Methodology of Studying Differentiated (Dis)integration: Or How the Potential Outcome Framework Can Contribute to Evaluating the Costs and Benefits of Opting In or Out\*

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## Abstract

The European Commission's 2017 White Paper on the Future of Europe sets out several scenarios related to differentiated (dis)integration. But although our understanding of the causes of differentiated (dis)integration has substantively improved over recent years, our knowledge about its consequences still remains limited. This shortcoming may lead to difficulties when it comes to formulating policy recommendations. Accordingly, we propose closer attention to the effects-of-causes of differentiated (dis)integration, linked to a more careful implementation of insights on causal inference. After briefly reviewing the foci and methods of existing literature on differentiated (dis)integration, we introduce a potential outcome model of causal inference. We provide an illustrative application of the synthetic control method, as one method related to this framework. Our analysis shows that the UK has economically benefitted from not joining the eurozone, but our argument more generally is about the practical implications of methodological choices in the study of differentiated (dis)integration.

**Keywords:** differentiated (dis)integration; potential outcomes framework; synthetic control method; economic and monetary union; European integration

## Introduction

The EU is a polity in the making and as such its institutional structure is regularly under debate. For example, recent crises affecting the integration project, such as the eurozone, the Ukraine and the Brexit crises, have once and again raised questions about the EU's future development. One manifestation of this self-examination is the European Commission (EC) White Paper on the Future of Europe (EC, 2017), issued about one year after the Brexit referendum. In this White Paper the EC summarizes different ideas or proposals for the EU's future, bundled in five scenarios. At least one of these scenarios, namely '[t] hose who want more do more', mirrors what is commonly referred to in the scholarly literature as 'differentiated integration'. In particular, the ideas spelled out in this scenario correspond to a form of differentiated integration that could be classified in between a multi-speed and variable geometry model of differentiation (Stubb, 1996). The European Parliament's 2019 resolution on differentiated integration, issued in response to the Commission's White Paper, aims at searching for the 'best way to operationalize differentiated integration – which is already a political reality – within the EU's institutional framework

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in the best interests of the Union and its citizens' (European Parliament 2019). Questions that repeatedly arise in debates on differentiated (dis)integration – and that are also aired in the two documents referred to above – relate to the policy areas in which differentiated (dis)integration would be desirable or not, and the short, medium and long-term consequences that differentiated (dis)integration have for insiders, for outsiders (who do not participate in further integration, and for the EU in general.<sup>1</sup>

In this article we diagnose a dominance of causes-of-effects studies in the literature on differentiated (dis)integration, at the expense of effects-of-causes analyses. The latter, however, may contribute to formulating evidence-based policy recommendations on differentiation. We argue that turning towards effects-of-causes would allow us to take into account insights from the potential outcome model of causal inference (cf. Angrist and Pischke, 2009; Morgan and Winship, 2014) more systematically. This may improve the internal validity of our insights on the effects of differentiated (dis)integration, which could, in turn, improve predictions about the effects of future differentiation treatments. For forecasting, however, scope conditions and possible effect heterogeneities, in addition, need to be theoretically specified and empirically assessed.

Our article is structured as follows. We begin by reviewing the literature on differentiated (dis)integration with a particular focus on methodology. We show that while our knowledge of the concepts and causes of differentiated integration has increased in recent years, our knowledge of its effects remains limited. We then present a potential outcome framework (POF) of causal inference and introduce one of the methods associated with it, the synthetic control method (SCM). We illustrate the SCM with an empirical application, namely the UK's decision not to join the eurozone, and propose a new way of applying the method by using reverse treatments. Substantively, our analysis shows that the UK has profited economically from not being part of the eurozone. Our main interest in this article, however, is methodological and we end by summarizing our plea for a stronger focus on effects of causes. We argue that methodological sophistication should not be considered as art for art's sake but as contributing to generating rigorous empirical research that can motivate evidence-based decision-making with respect to differentiated (dis)integration.

## 1. Differentiated Integration: From Causes to Consequences?

Before the 1990s, differentiated integration was largely taboo in European Community circles (Dahrendorf, 1979), but since then it has become a reality in the EU (Duttler *et al.*, 2017; Leuffen *et al.*, 2013). Today, there is an ongoing debate about whether and under which conditions further differentiation in the EU would be a desirable development. Ideally, the social sciences could inform this debate and the policy-making process by providing solid evidence on the consequences of differentiation. This would demand the existence of strong theories, data and methods. Against this backdrop, this section briefly reviews the causal literature on differentiated integration, with a focus on methodology.<sup>2</sup> We found that the literature on differentiation has matured over the past

<sup>1</sup>There is an abundance of contributions discussing the costs and benefits of integration for the EU as a whole or for individual states (for example, Pataki, 2014; Demertzis *et al.*, 2018)).

<sup>2</sup>A general review of the differentiation literature is offered by (Leruth, *et al.*, 2019). Because our interest is on causal theory, we do not here emphasize the normative contributions to the debate on differentiated integration.

20 years, but that there still is room towards well-designed effects-of-causes studies of differentiated (dis)integration.

The early research agenda was dominated by conceptual work carried out by scholars both of political science and law. Paradigmatic examples include Stubb (1996, 2002) and Tuytschaever (1999). For instance, Stubb (1996) presents an early categorization of differentiated integration, distinguishing a multi-speed, a variable geometry and an à la carte model, and his categorization of the dimensions of time, space and matter still guides our understanding of types of differentiation. A prominent example echoing these dimensions is the European Parliament resolution referred to above. In the 2000s causal theory and analysis became more important, as exemplified by works by Kölliker (2001), Andersen and Sitter (2006), Dyson and Sepos (2010) and Leuffen *et al.* (2013). Nonetheless, in their review of the field in 2012 Holzinger and Schimmelfennig (2012) still lament the existence of ‘many concepts, sparse theory, few data’. Leuffen *et al.* (2013) draw on integration theories to speculate about patterns of differentiation across time, space and policy areas. The empirical parts of their book consist largely of qualitative case studies of four policy areas. Their insights – that interactions between interdependence and politicization largely shape the horizontal and vertical patterns of differentiation – are condensed and further developed in two articles, namely Rittberger *et al.* (2014) and Schimmelfennig *et al.* (2015). The establishment of the EUDIFF dataset (Duttle *et al.*, 2017) has recently allowed a quantitative turn, exemplified by contributions from Duttle (2016), Winzen (2016) and Winzen and Schimmelfennig (2016). The focus of these works, again, is largely on the causes of differentiated integration.

Kölliker (2001) in contrast focuses on the effects of causes, which as a result of political anticipation, can have an effect on the realization of differentiated integration. He argues that the nature of policies and their expected external effects impact on the likelihood that a differentiation step would exert centripetal or centrifugal forces. Kölliker backs his theoretical claims with case studies. Kroll and Leuffen (2014), again using qualitative case studies, back Kölliker’s expectations using a large sample related to the enhanced cooperation procedure. Jensen and Slapin (2012) provide another exception to the general observation that there is a lack of studies on the effects of differentiated integration. These authors formulate a game theoretical model that provides insights on possible cascading effects and probe their model’s plausibility with short case studies. Schimmelfennig (2016) provides evidence of such mechanisms related to the Banking Union. Drawing on sociological theory, Rebecca Adler-Nissen (2009, 2014) gives a qualitative account of the effects of not joining a differentiated policy regime for outsiders. Mirroring the network analysis findings of Naurin and Lindahl (2010), she shows that the outsiders are not stigmatized or excluded from European decision-making circles. But a plethora of questions so far remain unanswered. For instance, the short, medium and long-term costs and benefits of opting out of – or opting into – specific policy areas are still underexplored. And such effects may, at the end of the day, be decisive for explaining whether opting-out states decide to join a policy in the future or not.

At a general level, we find that most causal studies on differentiated integration subscribe to a causes-of-effects logic. Admittedly, qualitative techniques such as process-tracing (Beach and Brun Pedersen, 2013; Bennett and Checkel, 2015) are well suited for this research objective. In contrast, most orthodox case-study methods have strong limitations when it comes to effects-of-causes approaches, but there are exceptions, as

well (see, for example, Leuffen, 2009). In the following, we recommend taking into account insights from the potential outcome model of causal inference when designing research on the consequences of differentiated (dis)integration.

## 2. The Potential Outcomes Framework

In this article we argue that a reliance on the POF (Rubin, 1974) could enhance our knowledge of the effects, of differentiated (dis)integration, especially in terms of costs and benefits. In a nutshell, the POF assumes that each individual subject in a given population<sup>3</sup> can be exposed to two different states, namely as treatment or as control, and that each subject has a potential outcome under both states. To estimate the effect of the treatment on each subject we must calculate the difference between the outcome under treatment and under control for each subject. The empirical challenge consists in the fact that each unit can only be observed either in the treatment or in the control state and we therefore need methods to approximate the counterfactual outcome under the unobserved state. Holland (1986) refers to this as the fundamental problem of causal inference.

For instance, scholars who are interested in the effects of a state's decision to opt out of a specific policy need to deal with the counterfactual scenario of what would have happened, had the state decided to join. In line with this, Koehler and König (2015) build on the POF to examine the effect of the introduction of the euro on government debts in eurozone countries. These authors show that eurozone members would have had higher levels of debt had they not introduced the common currency.

There are several methodological approaches in the literature that apply the POF perspective and address the fundamental problem of causal inference, as for example matching, regression discontinuity designs or difference-in-difference estimators. While these methods are well-established in economics, and increasingly in political science as well, they have been used less often in the study of differentiated (dis)integration.<sup>4</sup> We chose to illustrate one technique, namely the SCM (Abadie and Gardeazabal, 2003; Abadie *et al.*, 2010, 2015) applied to an instance of differentiated integration. The SCM addresses the fundamental problem of causal inference by synthetically constructing a counterfactual case which allows us to estimate the effect of a treatment at the level of an individual state. The method tries to approximate the experimental ideal, as already spelled out in John Stuart Mill's well-known method of difference, by using a data-driven matching process to construct synthetic comparisons on the basis of several control units. By comparing the counterfactual and the real-world case and development, the SCM allows for quantitative inferences where established quantitative methods may not be applied due to small sample sizes and, furthermore, offers a systematic choice of comparison units. By doing so, the SCM holds several advantages for the study of the effects of differentiated integration. So far, however, its applications in this research area remain limited (cf. Gomis-Porqueras and Puzzello, 2018; Hope, 2016; Koehler and König, 2015). In the next section, we present an application of the SCM to highlight its strengths, but also to point out possible limitations.

<sup>3</sup>We define population as the states that are considered to be potential members of a field of differentiated integration, whereas we define the term subject to refer to a single country within that group (cf. Gerring 2007).

<sup>4</sup>Note, however, that there also are critical voices, as exemplified, for example, by Leamer (2010).

### 3. Case Study: A Synthetic UK in the Eurozone

We here illustrate the SCM with an application that tests whether the UK benefited economically from the decision not to join the Economic and Monetary Union (EMU).<sup>5</sup> We chose to illustrate the method using the EMU as it represents one of the major leaps forward in European integration. The Maastricht treaty from 1992 required EU member states to introduce the euro. Of the group of countries that were already EU member states at that time, only Denmark and the UK opted out of EMU membership. While the UK had already decided to opt out during the initial negotiations of the Maastricht treaty, Denmark opted out after the first Danish referendum on the treaty in 1992. However, Denmark is disqualified as a potential case of interest as it remained part of the European exchange rate mechanism (ERM-II) which ties the Danish krone within a 2.25 per cent peg to the euro. We argue that Denmark may also be affected by decisions made within the EMU and by the European Central Bank through this link as it needs to keep its exchange rate to the euro stable within a small bandwidth. On the contrary, the UK was only briefly a member of the ERM-II from 1990 to 1992. Moreover, in light of the Brexit referendum results, this case is particularly interesting, given that opting out from EMU represents a previous instance of the disintegrative behaviour of the UK. We therefore chose the UK as our case of interest.

The economic consequences of the UK's decision not to participate in EMU are a contested topic in the academic literature. While some contributions find that opting out had negative implications on the UK's economic performance (Buiter, 2008; Sanso-Navarro, 2011), other scholars provide evidence that introducing the common currency would have had negatively affected the British economy (Mazumder and Pahl, 2013; Minford, 2008; Minford *et al.*, 2004). With this brief – and illustrative, for methodological purposes – case study, we aim to add to this body of research.

While previous applications of the SCM in the field of European integration examine the effects on member states that opted into new policy fields (for example, Hope, 2016; Gomis-Porqueras and Puzzello, 2018), we propose a strategy to assess opt-outs from new policy areas. To do so, we built on the idea of a reverse treatment, meaning that the treatment received by the unit of interest (the UK) was not to become part of the eurozone, whereas the initial members of the eurozone (that is, the donor pool) decided to join. In other words, the UK is not the unit of interest that *de facto* received a treatment because it maintained the status quo. In contrast, the treatment was received by the control group that was also used to construct a synthetic counterfactual. This may be of particular advantage in the context of differentiated integration as it increases the number of members in the donor pool, ideally resulting in an improved model with a better fit. It also represents a new approach for applying the SCM to comparative case studies.

<sup>5</sup>Another, more recent case of the relationship between the UK and the EU is Brexit. This case is, however, not suitable for illustrating our idea of a reverse treatment, as the UK would primarily be the *de facto* treated unit and the treatment has not yet come into force legally. Furthermore, as Sampson (2017) points out, remaining EU member states are expected to be affected by the UK's decision. In general, Abadie *et al.* (2015, p. 504) note that scholars should be aware of potential spillover effects between treated unit and members of the synthetic control when applying the SCM. The SCM however, builds on the stable unit treatment value assumption, which assumes that there are no spillover effects between units (Rubin, 1980). Nevertheless, established ways of applying a POF perspective via an SCM may help to estimate the economic costs of Brexit (Born *et al.*, 2016).

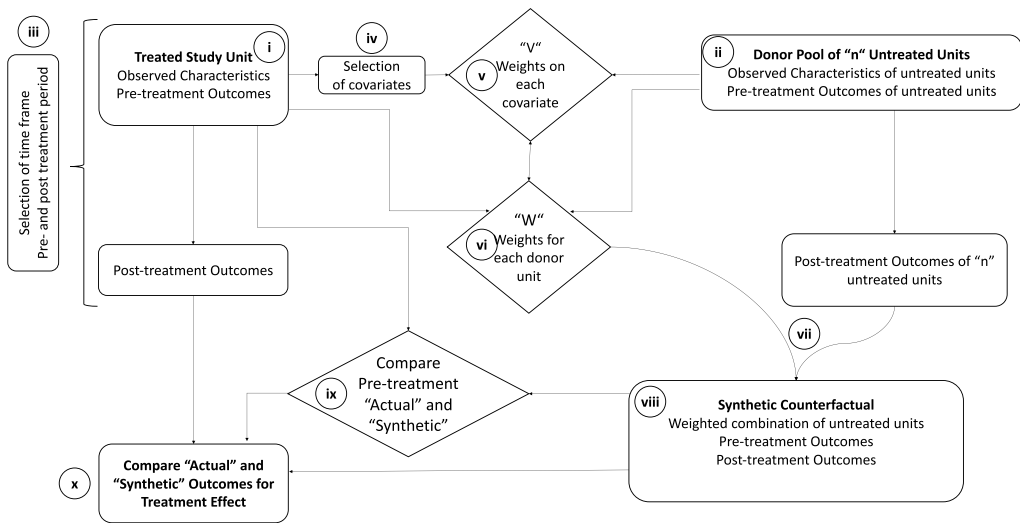
Figure 1: Synthetic Control Method (Following Sills *et al.*, 2015).

Figure 1 summarizes the main steps of the SCM. The synthetic control case was constructed on the basis of a sample of units consisting of (1) the *case of interest* (the UK) and (2) *possible units of comparison* (the so-called donor pool). We followed the recommendation by Abadie *et al.* (2015, p. 497) to include into our donor pool only states that are as similar as possible to the treated unit and exclusively selected member states that initially joined EMU.<sup>6</sup> Thus, the donor pool members were as alike as possible to the unit of interest, except for their EMU membership.<sup>7</sup> Moreover, restricting the donor pool to members of the eurozone allowed us to apply the treatment to all members of the donor pool. Starting from a theoretically defined outcome variable – gross domestic product per capita (GDP) which arguably should be affected by EMU membership – we aimed at constructing an artificial case that resembled the treated unit as much as possible.

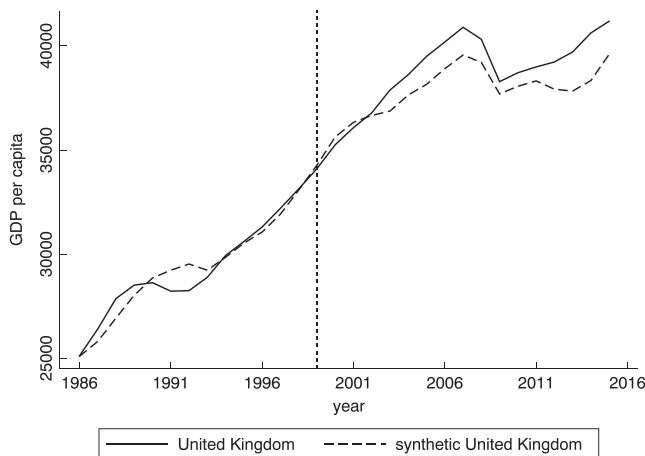
Moreover, we defined (3) a *time frame* that was divided into a pretreatment and post-treatment period. In the pretreatment period the synthetic case with respect to the outcome variable should mirror the test case as much as possible. This allows us to estimate the effect of the treatment by comparing the differences between the two cases in the post-treatment period. The unit of interest is exposed to the treatment (that is, not joining the EMU) during the post-treatment period and we assumed that the treatment has no effect during the pre-intervention period (Abadie *et al.*, 2015, p. 497).<sup>8</sup> Choosing the time frame is closely related to the construction of our donor pool. To guarantee a sufficiently large donor pool and at the same time to maintain a pre-intervention period of reasonable

<sup>6</sup>See Sills *et al.* (2015, p. 5) for a similar procedure. The donor pool members are reported in Table S2 in the Supporting Information online.

<sup>7</sup>Note that we excluded Greece because the idiosyncratic shocks it experienced during the financial crisis might have introduced errors into the results of our SCM. Including Greece into the donor pool slightly improves the fit of our model during the pre-intervention period, but our general results remain unaffected.

<sup>8</sup>We tested for anticipation effects but found no evidence for such pretreatment effects. We therefore assume that the establishment of the first and second stage of the EMU did not affect the unit of interest.

Figure 2: The UK and its Synthetic Twin before and after the Introduction of the Euro.



length, we only included countries that joined the EU no later than 1986. The treatment was then formed by the introduction of the euro in 1999 (that is, the third stage of the EMU).

We then chose (4) a *set of covariates* that were used as predictors of post-intervention outcomes of the treated unit. We followed similar studies (Abadie *et al.*, 2015; Gomis-Porqueras and Puzzello, 2018) and used a standard pool of economic covariates.<sup>9</sup> We pre-selected variables with a high predictive power for the dependent variable by correlating them with the development of the variable of interest of the unit of interest. We then selected a subset of variables according to the strength of the statistical correlation. Covariates were then (5) weighed in order to achieve a close fit with the unit of interest during the preintervention period.

Following the selection of donor pool and predictors, (6) each control unit  $i$  was assigned a weight  $w_i$  with  $0 \leq w_i \leq 1$  while the individual weights summed up to one in order to resemble the treated case. This helped to avoid extrapolation biases (Abadie *et al.*, 2015, p. 499). We then used a combination of the untreated units by (7) *weighing the outcomes of potential control units* to construct (8) *the synthetic counterfactual*.

The weights of the control units were chosen to resemble as closely as possible the characteristics of the treated unit in the pretreatment period. They were then used to estimate the counterfactual development of the variable of interest after the treatment. To gain predictive power in our model, we chose the weights to minimize the difference between the synthetic case and the treated unit to achieve a close fit between the two during the pre-intervention period. We then plotted the synthetic case against the unit of interest over the entire time frame in order to examine the model's fit during both (9) *pretreatment* and (10) *post-treatment*.

To construct our SCM, or what we refer to as the UK's synthetic twin, we employed a panel dataset retrieved from the World Bank's database that includes only member states

<sup>9</sup>Covariates may be found in the Supporting Information online.

of the EMU and the UK (World Bank, 2017). The results of our SCM study for a British membership in the EMU are presented in Figure 2, while tables S1 and S2 in the Supporting Information Online show the predictor balances and unit weights of the constructed synthetic twin. The counterfactual UK is constituted by France, Spain and Ireland. The algorithm underlying our SCM model selected this combination from our given donor pool as it provided the best available fit during the pre-intervention period from 1986 to 1999.

The estimated SCM overall provides a rather close fit to the actual economic development of the UK for the pre-intervention period. For the years 1991 and 1992 we observe some deviations that may be caused by the economic downturn that the UK was facing already when it joined the exchange rate mechanism (ERM) in 1990. At this early stage of the ERM, the UK pegged the pound sterling within a fluctuation band of  $\pm$  three per cent to the German Deutsche Mark. From 1990 onwards the German Bundesbank increased its interest rates to prevent inflationary tendencies related to German reunification, which created difficulties for the members of the ERM. Additional uncertainty was created by the Danish rejection of the Maastricht treaty through their first referendum on the treaty (Walsh 2007, p. 885) which put the pound sterling under stress as investors speculated against it (Kettell, 2008, p. 644). This led to the events of Black Wednesday on 16 September 1992, when investors extensively sold off pounds and the Bank of England tried to preserve the British ERM membership by vastly increasing interest rates. The measures taken did not stop the sales, which caused the UK to quit the ERM by the end of the day. The decision to allow the pound to depreciate outside the ERM contributed to the relatively rapid recovery of the British economy in 1993 (Walter, 2013, pages 1-2 f). After 1993 the pretreatment fit of our model improved considerably, which underlines its solid predictive power.

After the introduction of the euro in 1999, the UK and its synthetic twin briefly remain on a similar level, with the synthetic case marginally outscoring the real case. But from 2002 onwards the counterfactual UK scores lower than the real case. With the onset of the financial crises in 2008 and 2009 the gap between the two cases becomes considerably smaller but our model predicts that on average the British GDP per capita was at least 2 per cent higher than the synthetic case. For the years after 2011, the curves indicate higher differences in economic performance between the UK and the synthetic case.

Summing up, our model predicts economic disadvantages for a British EMU membership. On average, our SCM estimates suggest that the GDP per capita of the synthetic UK would have been smaller than that of the real UK by around US\$969 per capita after the establishment of the EMU. Thus, we find evidence that joining the EMU would have been economically harmful for the UK.

## Conclusion

Against the backdrop of re-emerging debates on the future of (differentiated) European (dis)integration, this contribution diagnoses a need for more literature on the consequences of differentiated (dis)integration. It argues that a turn towards the effects-of-causes and a careful taking into account of the potential outcome model of causal inference could help in better informing the public and political decision-makers in their policy and constitutional choices. This assessment, however, is not intended to discard the merits

of the existing work on the topic. The existing literature without doubt has already paved the ground in conceptual, theoretical and empirical terms and there is a continuing need for case study research as well. We back up our argument by applying the SCM to estimate the economic effects of the UK's decision not to join the eurozone. Without wanting to take sides in the Brexit debate substantively, our analysis shows that non-membership of the eurozone (as a reverse treatment) positively impacted on this country's GDP per capita growth rate.

Thus, the SCM allows us to formulate a numerical estimate of the causal effect and thereby provides a helpful contribution to the debate on European (dis)integration. At the same time the method's focus on numerical variables of interest may come at the price of neglecting non-numerical but still highly important dimensions of integration or politics, more generally. It should also be noted, that our finding rests on the assumption that a (counterfactual) British membership of the eurozone would not have increased the growth rates in the eurozone and that the individual variables of the synthetic case can indeed be analysed in isolation from other variables that affect real-world cases. Furthermore, we cannot necessarily infer that a similar effect would exist for the individual states of France, Ireland or Spain that constitute the UK's synthetic twin had they not introduced the euro. Instead, one would need to construct an individual synthetic twin for each unit of interest. Besides, as especially Spain and Ireland were hit by the Euro crisis our results might entail an overestimated negative effect during that time period.

Thus, while the SCM has merits with respect to enhancing internal validity, the problem of external validity or generalization is not yet solved. Our argument is that strong internal validity is a necessary condition for maximizing external validity. When generalizing or applying the results on past differentiation to future 'treatments', it must be established that similar conditions exist, to minimize effect heterogeneity. With respect to differentiation, characteristics of the policy areas, in particular, their expected externalities structures, must be established to assess whether findings about past 'treatments' are likely to apply in future instances.<sup>10</sup> The same holds for the case of disintegration. Finally, it must be acknowledged that the SCM is well suited for testing effects on individual units, in this case the member states, but that its capacities are more limited when it comes to formulating effects at the systemic level. This is because at the systemic level there are difficulties in identifying a suitable donor pool.

An application of the SCM – and other quantitative methods – to different areas of European integration, such as the Area of Freedom, Security and Justice or the Common Foreign and Security Policy is limited at least when it comes to applying it to non-numerical variables. At the same time, numerical variables in these areas, such as the number of migrants or military expenses, may very well conform to the mathematical demands of the approach and are also of great political as well as theoretical interest. Furthermore, other methods relating to the POF perspective, such as difference-in-difference designs or regression discontinuity designs could also be applied to similar cases. It should also be noted that incidental costs related to opt-out decisions are hard to grasp using the SCM, as it focuses on a single outcome variable.

While all these issues need to be taken into account when considering whether to use the SCM, our claim more generally is, that methodological rigor, in addition to fostering

<sup>10</sup>Cf. Cartwright (2011, 2012) for a more general discussion of potential pitfalls of predictions.

the potential to provide evidence-based policy advice, may also force us to think more rigorously through the concepts and the theories we have about differentiated integration. This also can positively contribute to knowledge accumulation in an increasingly important area of EU studies and practice.

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## Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1: Unit Weights

Table S2: Predictor Balance