

# The EU and Non-Trade Provisions in Trade Agreements: A Synthetic Control Approach

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## 1 Introduction

EU trade policy is increasingly evolving toward the inclusion of non trade-related provisions (NTP) in trade agreements. The effects of this strategy on socio-economic outcomes in partner countries are theoretically ambiguous and little has been done to test them empirically in a comprehensive and systematic way. Given its increasing uptake against a much inconclusive assessment, the debate on whether and how such strategy actually affects partner countries' policy environment is drawing a lot of attention (Bilal and Hoeckman, 2019).

We adopt a *Synthetic Control Methodology* approach (hereafter SCM) to build a set of quantitative comparative case studies.<sup>1</sup> Our aim is to investigate whether the EU's strategy of including NTPs in trade agreements is an effective tool to influence partner countries' non-trade related policy (in other words, the degree of EU's soft power). Looking at all the trade agreements signed between 1995 and 2008, the results show how the degree to which the EU's trade policy has been effective at shaping partners' country non trade-related performance has been highly heterogeneous, and depending not only on the type of signing partner considered, but also on the policy domain interested by each agreement.

## 2 Related Literature

There are not many studies focusing on whether and how inclusion of non-trade issues in trade agreements affects the performance of partner countries with respect to relevant non-trade policy outcomes. Overall, trade agreements cover many different non-trade dimensions which have traditionally been aggregated in three sets of issue areas: civil and political rights, economic and so-

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<sup>1</sup>Comparative case studies are particularly useful to assess the impact of specific occurrences at aggregate level (in the form of a policy intervention or an adverse or positive exogenous event) when the evaluation setting cannot be reconnected to a natural experiment. See for instance Abadie and Gardeazabal (2003); Abadie et al. (2010); Cavallo et al. (2013)

cial rights, and environmental protection.<sup>2</sup> Scholars have tended to examine these three issue areas, and the rights that fall under these headings, on a stand-alone, issue-specific basis as opposed to cross- or multi-issue analysis (see for instance Hafner-Burton, 2009; Kim, 2012; Spilker and Böhmelt, 2013; Postnikov, 2014). Among this body of research McLaughlin Mitchell and Hensel (2007) find that environmental standards are more effective if they are binding in their nature. Hafner-Burton (2009) shows that hard human rights clauses in trade agreements lead to compliance. This has been revisited by Spilker and Böhmelt (2013), who show that the positive effect decreases if one accounts for the selection process of human rights clauses in PTAs. To the best of our knowledge a direct comparison of all three issues areas in the context of trade agreements has not been undertaken.

### 3 Research questions, methodology and data

Our target is to understand whether and how non-trade related provisions (NTPs) included by the EU in trade agreements affect the performance of the partner signatory countries on those non-trade outcomes which are the direct objective behind the NTP of interest (e.g. labour rights, environmental sustainability, etc). We consider all agreements signed between any two partner countries between 1995 and 2008. This time period has been chosen based on the need to strike a balance between the availability of non-trade outcome data and the fact that synthetic control estimation requires to follow both treated and control units for a sufficiently long period of time before (matching) as well as after (follow-up) the signing of an agreement. As a first step, we identified the types of possible NTPs, that we consider as our “*treatments of interest*”. All in all, we have been able to define up to 14 policy dimensions, each of them covering a distinct socio-economic policy domain which were not directly related to trade. The list of all the policy dimension (NTPs) considered, is reported in Table 1. Each NTP indicator is matched with a specific set of non-trade related outcome indicators. In particular, we defined a broad set of administrative and social policy related outcome, which we processed to construct a *principal components aggregate* covering the various NTP-related areas identified in the first step (e.g. democracy, labour rights, etc). In selecting specific outcome indicators, we targeted those which were more likely to be immediately affected by the direct intervention of a government in response to the provisions included in an agreement. We provide some more detail on the principal component aggregation and a description of the SCM in Section 3.1.

Table 1: Principal Component Policy Aggregates and related NTP domains

Variable	Description	Auspicated Effect
Business	Economic Environment favourable to business	+
Corruption	Corruption and Red Tape	+
Civil Rights	Extension of Civil Rights	+
Education	Level of Education	+
Environment	Environmental Protection	+
Gender	Gender Equality	+
Health	Health related status and spending	+
Political rights	Political Rights for Citizens	+
Religious minority	Inclusion and Protection of Religious Minorities	+
Rule of Law	Extension of Rule of Law	+
Security	Public Security	+
Social Protection	Extent and inclusivity of Social Protection	+
Women rights	Extension of Women Rights	+
Work	Right to/at Work	+

In addition to the main exercise based on IPC aggregates policy outcomes, we also report the results on a selected numbers of individual NTO. Similarly to the case of IPC, we identify a number of individual NTO, characterized by a theoretically rapid response to policy changes (for instance, on NTO

<sup>2</sup>Civil and political rights cover many areas and vary across studies. They may include human dignity, the right to political participation, the right to free movement, women’s and children’s rights, protection of minorities, and rule of law. Economic and social rights encompass the right to work, rights at work, right to education, the right to development, and the right to health. Rights at work span the right to collective bargaining, the elimination of all forms of forced and compulsory labour, the effective abolition of child labour, the elimination of discrimination in respect of employment and occupation, minimum wages, and the right to leisure. Environmental protection encompasses care for natural resources (water, soil, forests), reducing waste and air pollution, and protection of wildlife and game.

directly depending on government budget allocations) and a number of observations over time that allows to control for both pre-treatment and post-treatment effects. The individual NTO related variable for which both conditions were verified are reported in Table 2. Notice that a limitation to this alternative set of exercises is that not all provisions' domains could be covered.<sup>3</sup>

Table 2: Individual policy outcomes and associated IPC component

Variable	Description	Auspicated Effect	Source
Corruption: Judicial System	Corruption and Red Tape	-	VDEM
Corruption: Media	Corruption and Red Tape	-	VDEM
Corruption: Public Sector	Corruption and Red Tape	-	VDEM
Basic Welfare	Extent and inclusivity of Social Protection	+	GSOD
Child Labor	Protection of Children from Work	-	WDI
Institutions: Clean Election	Extension of Rule of Law	+	GSOD
Institutions: Liberal Democracy	Extension of Rule of Law	+	VDEM
Institutions: Participation Index	Extension of Rule of Law	+	VDEM
Environment: CO <sub>2</sub> Emissions	Environmental Protection	-	WDI
Environment: Forest (% land coverage)	Gender Equality	+	WDI
Gender: Equality of Rights	Extension of Women Rights	+	VDEM
Gender: Participation Share	Extension of Women Rights	+	WDI
Gender: Political Empowerment	Extension of Women Rights	+	VDEM
Gender: Equal Opportunity at Work	Extension of Women Rights	+	GSOD
Security: Military Spending (% GDP)	Public Security	+	WDI
Security: Military Spending (% Tot. Exp)	Public Security	+	WDI
Security: Military Spending (USD)	Public Security	+	WDI
Civil and Human Rights: Personal Integrity	Extension of Civil Rights	+	GSOD
Civil and Human Rights: Equality	Extension of Civil Rights	+	GSOD

### 3.1 Methodology

Assessing the causal relationship between EU's trade policy and the changes in non-trade (directly) related policy outcomes is not immediate, since identifying the proper counterfactual might constitute a severe limitation to traditional policy evaluation techniques. We use a Synthetic Control Methodology approach (hereafter SCM), a generalization of the analytical framework to the comparative case studies (CCS), to identify such a causal relationship. The idea behind comparative case studies is that the impact of a given occurrence on a certain outcome can be estimated by simply comparing the evolution of a country's performance in response to such event with respect to the outcome experienced by a pool of control units who did not experience any similar shock. The selection of the control group becomes in this sense crucial for the reliability of the results. SCM generalizes the usual CCS approach by providing a transparent analytical weighting scheme, which allows to produce an optimal "synthetic" counterfactual of the treated unit (see for instance Abadie and Gardeazabal, 2003; Abadie et al., 2010; Cunningham, 2020).

For all exercises, we propose a matching based on two types of variables:

- *Past Values of the NTO of interest*: we included the 1<sup>st</sup>, 3<sup>rd</sup>, and 5<sup>th</sup> lag of the dependent variable in order to take the pre-agreement trend in NTO into account. Following Kaul et al. (2015), we only include every two lagged period to avoid overfitting.
- *Economy related covariates*: To capture the economic proximity between treated and potential control countries, we also include Per-Capita GDP, GDP, and Population (in levels and in growth rates)

Following Abadie et al. (2015), the simple comparison through the creation of a synthetic control is not sufficient to assess the causal impact of a policy change on a certain related outcome of interest. For instance, it could be that a significant difference in the performance of the treated unit with respect to its synthetic control might be driven by unobservable characteristics that are not controlled for when defining the synthetic control. Or, it might be that such difference is driven by time specific effects, which could be the only cause of a significant divergence between actual and synthetic units. Finally, it might happen that the inclusion of some control units into the synthetic pool could

<sup>3</sup>See Manchin (2021) for a description of the individual NTO variables. The codebook is available at <https://hdl.handle.net/1814/69596>.

drive the overall synthetic outcome, thus driving the emergence of a significant difference between the outcome of the synthetic control and the treated unit.

To control for these issue, we include, a set of robustness checks alongside the main synthetic control results. The first check that we consider is an *in-space placebo* test, to control for the appropriateness of the synthetic control. Broadly speaking, it consists in computing the difference between the treated unit and its synthetic counterfactual, iteratively assigning the treatment to one of the potential donors.<sup>4</sup> If the match is realistic, then the pre-treatment difference between the two should be around zero. This is repeated for all units in the control's donor pool, for which we expect the difference to be much more volatile and further away from the balance. Second, we perform a cross validation exercise, called *Leave-One-Out placebo* check, to test for the sensitivity of the synthetic counterfactual to the inclusion (or exclusion) of a given control unit. In fact, it is possible for the performance of the synthetic unit (and therefore, all differences with respect to the treated unit) to be driven by a single control (or group thereof). When this is the case, the results are not robust. Similarly to the in-space placebo test, we compute the difference between the treated and the synthetic control. Then, we replicate this exercise, but removing iteratively a control unit from the donor pool. The test can be considered robust if the pre-treatment difference between the treated and the synthetic control fluctuates around zero, while the differences between the treated and the alternative placebo counterfactuals fluctuate far from the balance. We finally report the *POST-PRE Root Mean Squared Error ratio* (RMSPE ratio), which represents a measure of the fit of the synthetic control with respect to the in-space permutation exercise, and compute a pseudo p-value for the original match, based on how it ranks with respect to all placebo iterations of the synthetic control.

### 3.2 Description of the Output

In the annex to the current note, we present the results from the synthetic control exercise. The first set of result include a Difference-in-Difference estimation. For each exercise and NTPO of interest, we pooled together all the countries for which it has been possible to run a SCM algorithm and their synthetic counterfactuals. Our aim related to this exercise is to identify and collect any evidence of a systematic average effect of each NTP across the different scenarios described above.

Then, for each EU's trade partner for which we have been able to run a SCM analysis, we provide the following output:

1. A table listing the set of countries eligible as control units (the donor pool), together with the attached weight, and the comparison between the trend of the NTPO of interest for the country of interest and its synthetic counterfactual. For reasons of space, we only reports those countries that are positively weighted by the SCM routine. This, despite the fact that in most cases, the number of countries actually considered in the construction of the synthetic counterfactual is a subset of the donor pool.
2. A graph plotting the trend in the NTPO of interest for both the treated country and all countries in the donor pool;
3. The graph plotting the NTPO of the treated country (solid red line) against its synthetic counterfactual (dashed black line). This graph is the proper SCM output. For a good case, we require (a) the pre-treatment discrepancy to be minimal; and (b) the post-agreement trends to diverge substantially;
4. The trend in the predicted error of the treated country (against the control). A good matching requires the predicted error (solid line) to be as close as possible to zero in the pre-agreement period, and to diverge after the agreement.

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<sup>4</sup>Potential donors also include all the countries that received a null weight in the original matching.

5. The distribution of the post-pre RMSPE ratio across the placebo controls (reported later). In this case, we want the treated unit to exhibit the largest value possible. A pseudo p-value for the treated unit is reported at the bottom of the chart, together with the absolute position of the treated country with respect to the countries in the donor pool.
6. First Robustness Test: The plot of the in-space placebo test, reporting the result of all SCM regressions computed by iteratively replacing the treated country with one of the potential control units in the donor pool.
7. Second Robustness Test: The plot of the Leave-One-Out test, reporting the result of all the SCM regressions obtained by iteratively excluding one potential donor at a time.

### 3.3 Research Questions

In order to quantify the extent of EU's soft power as mediated by its trade policy strategy, we need to disentangle the effect of NTPs from the effect of EUs NTP. To do so, we propose four distinct sets of exercises, differing in terms of the conditions required for a country to be considered as treated, as well as for the conditions applied to the control group (or, *donors pool*). We define a first set of conditions to identify "treated" units as follows

**Treatment condition 1** *Country  $c$  signs a trade agreement at time  $t$  and the agreement contains the relevant NTP.*

**Treatment condition 2** *The EU must be a partner in the trade agreement.*

For each country we only consider one occurrence of the treatment. That is, we select only one trade agreement, no matter the number of additional agreements it may have signed in the period 1995-2008. In order to identify the suitable treatment occurrence which allows a sufficiently long pre- and post-agreement period with no other treatment occurrences, we systematically review all agreements signed by any given country in that period. Among all potential instances when the country signed an agreement satisfying the conditions of interest, we select the occurrence (i.e. Trade agreement) at the highest time distance from both the preceding and the subsequent one. Formally we introduce the following selection criterion:

**Selection criterion 1** *For each country  $c$ ,  $t$  maximizes the number of years between the previous and subsequent treatment occurrence (if they exist). Irrespectively from the length of such time spell, no agreement meeting Conditions 1 and 2 must have been signed in the previous 9 years, nor is going to be signed in the subsequent 4 years.*

Notice that Condition 1 is the necessary and sufficient condition in the identification of treated countries in the benchmark "global" exercise. In the remaining EU-focused exercises, we also impose Condition 2, to isolate the role played by the EU's trade policy.

While the conditions to define the treated units are stable across exercises, the conditions applied for a country to be considered a suitable control differ substantially. Such conditions are listed below.

#### 3.3.1 First exercise: The effect of NTPs (Baseline framework)

In the first exercise our aim is to assess effect of each NTP on the related outcome variable, independently on the signatory partners in the agreement. For each treated unit (defined as a pair country-treatment year) we construct a pool of control units (the "Donor Pool") including all third countries satisfying the following two necessary *negative* conditions:

**Control condition 1** *Country  $c$  must have signed at least one trade agreement in a temporal neighborhood of three years from the treatment year (i.e. the year in which the treated unit signed the agreement), but without the relevant NTP in the period of interest. In case a country signed more than one*

*agreement eligible for the donor pool in the period of interest, we select the one minimizing the temporal deviation (either forward or backward) from the treatment year of the treated country.*

**Control condition 2** *Country c must not have signed any trade agreement that would classify it as treated in the period period that goes from 5 years before the eligible year (for the control) to 4 years after.*

Condition 2 is required by the fact that many countries signed more than one eligible agreement in the period of interest. This could harm the identification assumptions underlying the SCM. Nonetheless, excluding all countries that signed more than one agreement in the reference period would leave no country in the donor pool. With Condition 2 we are looking for a balance between identification and feasibility, by reducing the risk for the estimated effect of a given NTP to be biased by the presence of potentially confounding occurrences (for this reason, we impose the Control Condition 2 in all the proposed exercises).

### **3.3.2 Second exercise: the EU effect (conditioning on the provision)**

In the second exercise we look for identifying the effect on non-trade outcomes for a country signing an agreement including the relevant non-trade provision with the EU. We define the donor pool for each treated unit (identified by the Treatment conditions 1, 2 plus the selection criterion 1) as the set of countries who signed an agreement containing the same NTP of interest, neither with the EU nor the USA, within a period going from 5 years before the year eligible for being included in the control group, to 4 years after. This condition allows us to assess the causal impact (if any) of signing an agreement (at least one) with the EU which contains a specific non-trade provision as opposed to having an agreement (at least one) including the same provision but signed with a partner different from the EU (and the US). A positive effect here might be interpreted in terms of effectiveness of EU's soft power in making its trade policy working for non-trade objectives. For the sake of completeness we define the two control conditions used in this second exercise in combination with the Control Condition 2 as:

**Control condition 3** *Country c must have signed at least one trade agreement with the relevant NTP.*

**Control condition 4** *Country c must not have signed any trade agreement with the EU or the US within the period that goes from 5 years before the treatment year to 4 years after.*

### **3.3.3 Third exercise: the composite effect of EU and provision**

In the third exercise, our goal is to identify the composite effect of: (i) the provision, and (ii) the EU being a partner in the agreement. We look at the differences in terms of non-trade outcome performance between those countries who signed one or more agreement containing the provision of interest with the EU (treated units are again identified by the Treatment conditions 1, 2 and by the selection criterion 1), and those who signed (at least) one trade agreement but no one including the provision of interest, and no one with the EU. Consistently we modify the definition of the donor pool which here includes countries that signed a trade agreement (Control condition 1) and that did not sign any agreement qualifying it as treated in the period that goes from 5 years before the treatment year to 4 years after (Condition 2), plus the additional following condition:

**Control condition 5** *Country c must not have signed any trade agreement with the EU within the period that goes from 5 years before the treatment year to 4 years after.*

### **3.3.4 Fourth exercise: the provision effect (conditioning on the EU)**

In the fourth exercise, we ask whether NTPs included in EU agreements (containing a specific NTP) have any significantly different effect on the respective non-trade outcomes, compared to those EU agreements not including the related NTP of interest. Similarly to the previous two exercises, we

identified the treatment units among all the non-EU countries signing an agreement with the EU and containing the provision of interest (Treatment conditions 1, 2 and 1). The criteria used to define the control group instead change: we consider only those countries that signed (at least) one agreement with the EU in a time window of 3 years around the treatment year as stated in the following condition:

**Control condition 6** *Country  $c$  must have signed at least one trade agreement with the EU without the relevant NTP within a three years neighborhood around the treatment year.*

As in all previous exercises, we also impose that a control unit should not have signed any agreement qualifying it as treated in the previous 5 (subsequent 4) years (Control condition 2).

A positive effect here would suggest the existence of a provision specific effect within the population of EU agreements.

### 3.3.5 Fifth exercise: EU vs US

In the fifth and last exercise our aim is to assess the effect of signing an agreement featuring an NTP with the EU as opposed to the US. To do so we modify the donor pool as consisting of all countries that (i) signed a trade agreement with the US and including the relevant NTP in a time spell of 3 years around the treatment year; and (ii) did not sign any trade agreement with the EU within the period that goes from 5 years before the treatment year to 4 years after. The conditions used to define the donor pool of control units are therefore Conditions 2 and 5 plus the following new one:

**Control condition 7** *Country  $c$  must have signed at least one trade agreement with the relevant NTP and the US as a signatory party within a three years window centered on the treatment year.*

As an additional effort to ensure the consistency of the results, we also exclude EU countries from the list of the potential control units. Table 3 summarizes the three exercises and the conditions defining the treated and the control units.

Table 3: Summary of exercises

Exercise	Treatment units ( $c, t$ )	Control units
<b>1 (baseline): the provision effect</b>	Signing an agreement with the relevant NTP (Treatment conditions 1 and 1)	Signed an agreement without the provision of interest in $[t-3, t+3]$ , and signed no agreement qualifying it as treated in $[t-5, t+4]$ (Control conditions 1 and 2)
<b>2: the EU effect given provision</b>	Signing an agreement with the provision of interest with the EU (Treatment conditions 1, 2 and 1)	Signed an agreement with the provision of interest in $[t-3, t+3]$ no agreement with EU (nor US) in $[t-5, t+4]$ signed no agreement qualifying it as treated in $[t-5, t+4]$ (Control conditions 2, 3 and 4)
<b>3: the EU-provision composite effect</b>	Signing an agreement with the provision of interest with the EU (Treatment conditions 1, 2 and 1)	Signed an agreement without the provision of interest in $[t-3, t+3]$ , and no agreement with relevant NTP nor with EU in $[t-5, t+4]$ signed no agreement qualifying it as treated in $[t-5, t+4]$ (Control conditions 1, 2 and 5)
<b>4: the provision effect given EU</b>	Signing an agreement with the provision of interest with the EU (Treatment conditions 1, 2 and 1)	Signed an agreement with the EU in $[t-3, t+3]$ signed no agreement qualifying it as treated in $[t-5, t+4]$ (Control conditions 2 and 6)
<b>5: EU vs US</b>	Signing an agreement with the provision of interest with the EU (Treatment conditions 1, 2 and 1)	Signing an agreement with the provision of interest with the US in $[t-3, t+3]$ but no agreement with the EU in $[t-5, t+4]$ signed no agreement qualifying it as treated in $[t-5, t+4]$ (Control conditions 2, 5, and 7)

### 3.4 PCA and Definition of the outcome variables

In all the exercises described above, we focus on summary indexes capturing different domains reflecting the content each possible provisions promoted by the EU via trade agreement. In particular, we identify four main domains (Political Rights, Economic Issues, Environmental Protection, and Security issues), capturing 14 sub-dimensions of non-trade policy outcomes, which are expected to be affected by the related provisions. For each of sub-dimension, we hence build a summary index aggregating different policy outcomes via Principal Component Analysis (PCA). We then interpolate the resulting PCA aggregate to reduce the breaks in the data, that would cause the failure of the SCM algorithm. Table 4 summarizes the 14 indexes, divided along the four policy dimensions identified, together with the number of individual policy variables included in each PCA aggregate. The complete list of the PCA components and the methodology we followed is summarized in Manchin (2021).<sup>5</sup>

Table 4: Number of variables used and resulting observations for PCA variables

Domain	Sub-categories	Unmodified groups		Interpolated/extrapolated groups	
		N. of variables used	Observations	N. of variables used	Observations
Civil and Political Rights	'cwrights'	16	2775	16	3967
	'womenrights'	5	6667	5	7833
	'corruption'	7	7423	7	8686
	'ruleoflaw'	7	6925	7	7598
	'politicalrights'	30	3233	34	3761
Economic and Social Rights	'gender'	8	3496	9	3701
	'socprotection'	9	676	9	861
	'childlabour'	12	119	12	323
	'business'	8	1962	9	3623
	'health'	7	4190	7	8823
	'work'	12	5218	12	5770
	'education'	9	2222	10	4993
'rel_minority'	2	4440	2	5405	
Security Issues		11	8075	14	8720
Environmental Protection		10	6419	10	7722

<sup>5</sup>PCA aggregates listed in Table 4 include and aggregate for Child Labor. However, no exercise we conducted have been able to explore the effect of NTP on child labor.



## **4 Results: links to output files**

The results are reported in two separate report, accessible [here](#). For each exercise described above, the report shows (i) the outcome of the Difference-in-Difference aggregate analysis on all treated units for each policy dimension (NTP); and (ii) the results for each individual case study (i.e. treated unit) we have been able to identify, sorted by outcome and country. For all individual case study, a selection of robustness tests are also shown.

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