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EXTENDED ABSTRACT

Title: Do Cohesion Funds foster regional trade integration? A structural gravity analysis for the EU regions.

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Subject area: *S04 – Territorial inequalities and spatial (in)justice in Europe*

Abstract: *(minimum1500 words)*

A growing body of literature explores the impact of trade-related policies on national economies. Surprisingly, similar assessment on regional level is much less common, despite the fact that there is much more trade taking place at short distances, between regions, compared to the level of trade between countries.

This study carries out a counterfactual experiment that sheds light on the regional trade and welfare effects arising from the European policies. To this end, we employ a modified version of the Structural Gravity model developed by Anderson et al. (2018) to simulate potential effects of a specific EU-wide policy. In particular, we focus on the current EU Cohesion program 2014-2020 and take the investments in road infrastructure of over 60 billion € as a policy-case study. We note, however, that the method used in this study is very flexible and can be adopted to derive trade and welfare effects in a wide range of national or international policy settings.

The contribution of this study is threefold. First, it provides an ex-ante evaluation of the impact of the European Cohesion Funds programme on trade, convergence and on territorial inequalities on regional level. Second, the analysis is implemented using the Poisson-pseudo-maximum-likelihood estimator (PPML) in a structural gravity setup, which enables us to disentangle trade creation and trade diversion effects of the policy and estimate its long-run welfare implications. Finally, the study employs several novel regional EU datasets to calibrate the model. The first dataset comes from Thissen et al. (2019) and contains the matrix of inter-regional trade flows for the 267 NUTS-2 EU regions for 2013. The second data-set is the matrix of inter-regional generalised

transport costs (GTC). This GTC matrix is constructed by Persyn et al. (2020) and takes into account all distance and time-related economic costs for road freight transport among the 267 NUTS-2 EU regions. As a result, it provides a nominal € measure of interregional transports costs. The third matrix takes use of the two previous datasets and converts the GTC matrix into a matrix of iceberg-type trade costs which is theoretically coherent with our structural gravity framework.

To carry out the counterfactual evaluation of the EU Cohesion Policy, we construct the GTC and iceberg-type trade cost matrix for a baseline and a counterfactual scenarios. To this aim, we use the cost-benefit analysis described in Persyn et al. (2020) and estimate the effect of the transport infrastructure investment carried out under the cohesion framework on the inter-regional transport costs. That is, we estimate the potential reduction in transport costs once the EU road infrastructure network is improved thanks to the investment of the EU cohesion policy. This results in a counterfactual transport cost matrices that are used to carry out the evaluation of the policy effects.

The use of the baseline and counterfactual trade-cost matrices makes this study the first to estimate the impact of a EU-wide policy in a gravity set-up for the members of a single market with no internal trade barriers. Furthermore, we believe to be the first in using a structural gravity model to consider these issues at regional level.

Our work builds on a growing body of literature that seeks to quantify counterfactual trade and welfare effects. In particular, our approach is similar to the one of Dhingra et al. (2017) and Mayer et al. (2019). These two studies explore trade-related welfare effects of the EU integration. Dhingra et al. (2017) use a standard quantitative general equilibrium trade model with many countries, sectors and trade in intermediaries and calculate medium to long-run effects of Brexit, with a focus on trade and fiscal transfers. The authors simulate a number of counterfactual scenarios for the post-Brexit trade relationship between the EU and the UK, including the option for the UK to remain a part of the EU single market a la Norway ('soft Brexit'), and the UK trading with the EU under the World Trade Organisation rules ('hard Brexit'). Finally, when the dynamic effects of Brexit on productivity are taken into account the losses from any form of Brexit more than triple, partially through the decline in foreign investment. At the same time, Mayer et al. (2019) quantify the effects of a much broader set of policy scenarios of the EU disintegration. The authors also disentangle the effects of various EU agreements and regional trade deals and estimate the changes in trade flows arising due to the specific steps of the EU integration process (Single market, Schengen, and the Euro). Furthermore, the simulation of the latter study are based on the estimates of the direct trade effects of the EU obtained using the latest available data and a structural gravity estimation method. At the same time, Dhingra et al. (2017) base their simulations on tariff-equivalent calculations of Non-Tariff-Barriers obtained from the literature. Felbermayr et al. (2018) -another relevant study- estimates an industry level gravity regression for 2000-2014. The authors collect bilateral tariff rates and add them to the regression in addition to the EU dummy. This approach provides them with their own estimate of trade elasticity, which is further used to calculate the tariff equivalent of the EU and potential trade gains associated with tariff cuts. Using this approach, the authors find that most of the EU trade effects come from factors other than tariffs. Overall, the studies discussed above are complementary and, taken together, provide estimates for wide set of the EU disintegration scenarios on aggregate and sector level.

Our study builds upon this work and estimates the effect of the EU Cohesion policy taking into account not only sector, but also regional dimension.

Our results indicate that the effects of the reduction in transport costs due to the infrastructure investments differ significantly among regions. In particular, they reveal the highest gains for the Central and Eastern European Regions. For example, long-run trade gains for some of the Polish NUTS2 regions range between 5% to 10%, and the corresponding (real) GDP gains vary between 10% and 16%. The latter effect is associated mostly with the reduction in consumer prices after the policy implementation. Other regions that experience the highest trade and welfare effects are located in such countries as Estonia, Latvia, Lithuania, Czechia, Romania, and Hungary. At the same time, most regions of Western Europe, characterised by ex-ante relatively advanced infrastructure, seem to benefit from spatial spillovers effects and experience small positive and, in some cases, negligible negative effects, as a result of the policy. For example, some regions of Germany, Netherlands and France, as well as a number of remote islands of Italy and Greece exhibit negative effects in terms of trade and welfare. We note, however, that such results are mostly conditioned by our assumption that most of the EU investment is channeled towards road improvement.

In an era in which the European policy debate is centered around the reduction of spatial inequalities with the a purpose of a more unified European single market, these results shed light on the effects of European regional and public policies.

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Keywords: *(maximum 6 words)*
JEL codes: F13, F14, F15, R13


24 - 26 | November 2021 | Madrid
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International Conference on Regional Science
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