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Stefani Stefanova
Sophie Bandarkar
Yoto V. Yotov



DREXEL UNIVERSITY

Center for

Global Policy Analysis

LeBow College of Business

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A Reassessment of the Impact of the Organisation for Economic Co-operation and Development on International Trade

Stefani Stefanova
ETH Zurich

Sophie Bandarkar
Princeton University, SPIA

Yoto V. Yotov*
Drexel University

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Abstract

Using disaggregated data and established econometric methods, we re-evaluate the impact of the Organisation for Economic Co-operation and Development (OECD) on international trade among its members. In contrast to previous studies, we conclude that, overall, the OECD has not led to increased trade among its members. However, we find evidence that the OECD has promoted members' trade in certain sectors and, more importantly, for certain groups of European countries, i.e., the Visegrád group and the Baltic states, which share common history and economic characteristics. Based on this, we expect similar positive trade effects for some prospective OECD members.

JEL Classification Codes: F10, F14, F15, O43

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1 Introduction

The Organisation for European Economic Co-operation (OEEC) was established in 1948 to administer the Marshall Plan (U.S. Congress 1948) and, by fostering collaboration among European nations, the OEEC aimed to rebuild war-torn economies and promote economic stability. In 1961, the OEEC transitioned to the OECD, expanding its membership beyond Europe to include major economies worldwide. Today, the OECD is a platform for its thirty-eight member countries to collaborate on developing policies that promote sustainable economic growth, improve social well-being, and address global challenges such as climate change, inequality, and technological transformation.

Unlike the World Trade Organization (WTO), the OECD is not a treaty-based organization and it does not wield direct policy influence on trade, such as mandating trade agreements or negotiating trade policies. However, Article 1 of the Convention on the OECD states that “[t]he aims of the Organisation for Economic Co-operation and Development (hereinafter called the “Organisation”) shall be to promote policies designed ... to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.” (OECD 1960).¹ Moreover, the OECD may play an indirect role in shaping the conditions under which trade can thrive by implementing organization’s objectives and initiatives to promote stable economic policies, improved transparency, regulatory cooperation, reduced barriers to economic integration, and global open markets (OECD 2023, OECD & WTO 2024).

OECD members account for more than two thirds of world trade. As such, if the OECD could successfully promote trade among its members, this would have a significant effect on global trade. Moreover, this may benefit significantly the prospective OECD members, many of which are small open economies that would enjoy significant gains from further trade liberalization.² Thus, perhaps not surprisingly, the impact of the OECD on international

¹“Freeing up trade” was also a central part of Marshall Plan expectations for the European countries.

²Currently, the OECD has accession discussions with eight candidate countries – Argentina, Brazil, Bulgaria, Croatia, Peru and Romania (since 2022) and Indonesia and Thailand (since 2024).

trade has been of interest to both academic and policy analysis. Most notably, in a highly cited paper, Rose (2005) uses a ‘standard gravity model of trade’ and a large panel dataset to find that OECD membership had a large positive effect on its members’ trade. Specifically, the main result from Rose (2005) is that “membership in the OECD boosts trade by over 50%, holding other things constant, an amount that is both robust and economically and statistically significant.” (p. 682).

Rose’s result, which for the current purposes we dub *‘the OECD puzzle’*, is surprising for two reasons. First, the OECD estimate is very large in absolute terms, especially given that the OECD does not have explicit and direct objective to decrease trade costs and promote trade. In addition, within the same specification, Rose finds that the OECD impact on trade is larger than the corresponding estimates of the effects of the WTO and its predecessor the General Agreement on Tariffs and Trade (GATT), organizations that were specifically designed to promote international trade among their members and beyond.

Despite the general interest in the effectiveness of the OECD as one of the leading international organizations and the suspiciously large estimates of the OECD effects on trade from Rose (2005), the related literature is scant. In fact, we only found one study (Davis & Gowa 2013), which revisited Rose’s findings, and another paper (Chen & Novy 2022), which used an indicator for OECD membership as a control variable. Interestingly, both papers confirm and reinforce Rose’s ‘OECD puzzle’. Specifically, Davis & Gowa (2013) obtain large, positive, and statistically significant estimates of the OECD effects on trade, which are four times larger than the corresponding effect of the GATT/WTO. Similarly (Chen & Novy 2022) obtain positive and statistically significant estimates of the impact of OECD membership on trade, which are much larger than the effects on trade of the WTO, two to three times larger than the effects of regional trade agreements (RTAs), and even larger than the OECD estimates from Rose (2005).³ In sum, according to small literature on the impact

³Kang & Fratianni (2006) do not estimate the direct impact of OECD membership on trade. However, consistent with Rose (2005), they find that the negative impact of distance is smaller for trade between OECD members than for trade between non-OECD members.

of OECD on international trade, Rose’s ‘OECD puzzle’ is quite persistent.

Against this backdrop, we make two contributions to this literature. First, from a methodological perspective, our objective is to revisit Rose’s results by quantifying the impact of the OECD with new data and with more recent and improved estimation methods. Second, from a policy perspective, we aim at providing heterogeneous estimates of the impact of the OECD across disaggregated industries and sectors and also across groups of countries, which we believe may have been affected differentially from joining the OECD.

On the data front, we use trade flows from the *International Trade and Production Database for Estimation* (ITPD-E) (Borchert et al. 2021, 2022), which has several advantages for our purposes. First, the ITPD-E is constructed from raw data without reliance on any statistical modeling. Thus, it is appropriate for estimations. Second, the ITPD-E includes consistently constructed international and domestic trade data, which has been important for quantifying the impact of trade policies in the gravity model (Yotov 2022). Finally, the ITPD-E covers a large number of countries (more than 200) and industries (170) over a long period of time (1986-2019). In addition to the ITPD-E, we employ other datasets for the control variables in our model. Finally, we construct and experiment with two alternative indicator variables to capture the effects of OECD membership.

To specify our econometric model, we follow the best current practices for estimating gravity models from Larch et al. (2025). Specifically, capitalizing on the ‘separability’ property of the theoretical gravity model, we obtain industry- and sector-level OECD estimates. To take into account the information that is contained in the zero trade flows and to address heteroskedasticity concerns, we estimate our gravity model in multiplicative form with the Poisson Pseudo Maximum Likelihood (PPML) estimator (Santos Silva & Tenreyro 2006). Motivated by theory (Anderson & van Wincoop 2004), we use exporter-industry-time and importer-industry-time to control for all country-industry-time specific characteristics that may impact trade on the exporter and on the importer side. We rely on country-industry-pair fixed effects and we include a set of international industry-border-time fixed effects to

account for all time-invariant bilateral trade costs and common globalization trends. Finally, we also include a series of time-varying bilateral policy variables.

Three main results stand out from our analysis. First, in contrast to Rose (2005), we conclude that, overall, the OECD did not lead to increased international trade among its members. However, second, we also provide evidence that OECD membership has promoted members' trade in certain sectors such as 'Food' (trade increase of about 27%), 'Beverages and Tobacco' (27%), 'Wood' (25%), and Paper' (21%).

Third, and most importantly, we find that OECD membership led to increased trade for the countries in the Visegrád group (the Czech Republic, Slovakia, Poland, and Hungary) and that the OECD had even stronger positive trade effects for the Baltic states (Estonia, Latvia, and Lithuania). Specifically, the Visegrád countries experienced the largest increase in trade in the 'Transportation' (89.27%), 'Beverages and Tobacco' (55.89%), and 'Machinery' (37.44%) sectors, while the largest trade-promoting effects for the Baltic states are in the 'Transportation' (114.68%), 'Beverages and Tobacco' (88.70%), 'Machinery' (66.86%), and 'Mineral Products' (52.50%).

Consistent with existing evidence about the positive impact of membership in international organizations on government credibility (Dreher & Voigt 2011, Michaels & Zhi 2010), the direct links between institutional quality and international trade (Anderson & Marcouiller 2002, Beverelli et al. 2023, Nenov et al. 2025), and the inverse relationship between policy uncertainty and international trade (Handley & Limao 2015, Handley & Limão 2017), we attribute the trade-promotion OECD effects that we obtain to indirect channels and OECD initiatives such as signaling lowering uncertainty, economic stability, improved institutional quality, transparency, and regulatory cooperation. Our hypothesis is consistent with the analysis of Nenov et al. (2025) who provide strong evidence for significantly improved institutional quality post OECD accession for the countries in the Visegrád group.⁴ Based on this, we anticipate that similar positive trade effects can be expected for prospective OECD

⁴The analysis of Nenov et al. (2025) is based on data from the World Bank's Worldwide Governance Indicators (WGI) database, <https://www.worldbank.org/en/publication/worldwide-governance-indicators>.

members, especially those (e.g., Bulgaria, Croatia, and Romania) that share many economic and historical similarities with the Visegrád states.

The rest of the paper is organized as follows. We specify the econometric model in Section 2. Section 3 describes the data and sources for our analysis. Our findings are presented and discussed in Section 4. Finally, Section 5 offers concluding remarks.

2 Econometric Methods

To obtain estimates of the effects of OECD on trade among its members, we rely on the workhorse model of trade – the gravity equation. Specifically, we estimate alternative specifications of the following econometric model:

$$X_{ij,t}^k = \exp[OECD_{ij,t} \times \beta^k + POLICY_{ij,t} \times \alpha^k + GLOB_{ij,t}^k + \vec{\mu}_{ij}^k + \pi_{i,t}^k + \chi_{j,t}^k] \times \epsilon_{ij,t}^k \quad (1)$$

Equation (1) is consistent with a wide class of theoretical foundations, e.g., including leading gravity theories on the supply side (Eaton & Kortum 2002, Costinot et al. 2012) or on the demand side (Anderson & van Wincoop 2003, 2004).⁵ This is important because some of the terms in equation (1) as well as our econometric methods will be motivated by theory.

We follow the recommendations of (Larch et al. 2025) to specify equation (1). The dependent variable, $X_{ij,t}^k$, denotes nominal (Baldwin & Taglioni 2006) trade flows at delivered prices and in common currency from exporter i to importer j in industry k at time t , i.e., the dependent variable includes directional trade (exports and imports) at the industry level at each point of time. Based on the recent analysis of Egger et al. (2022), we will use data for consecutive years, instead of data with intervals, as suggested by Cheng & Wall (2005). $X_{ij,t}^k$ includes both cross-border/international and domestic/internal trade flows, which is consistent with structural gravity theory and may have important consequences for gravity estimations (Yotov 2022). For example, Dai et al. (2014) demonstrate that much of the

⁵(Arkolakis et al. 2012) demonstrate that many theories lead to isomorphic gravity equations. Yotov (2024) offers a recent review of the evolution of the structural gravity model.

increase in bilateral trade flows between FTA members is actually due to diversion from domestic sales. Thus, gravity specifications that do not include domestic trade flows may under-predict the effects of FTAs. The same logic may apply to the impact of the OECD.

Due to the separability of the theoretical gravity model (Anderson & van Wincoop 2004, Costinot et al. 2012), equation (1) can be estimated at any level of aggregation, e.g., product, industry, sector, aggregate. This is important for the current purposes, as it would enable us to estimate the model separately, and consistent with theory, for each of the 170 industries that are available in our data.⁶ In addition, guided by theory, we will be able to obtain aggregate estimates at desired level of aggregation by pooling (instead of aggregating) the industries in our data.⁷

Motivated by Santos Silva & Tenreyro (2006), we will use the Poisson Pseudo Maximum Likelihood (PPML) as our preferred estimator. Due to its multiplicative form, the PPML estimator would enable us to include and take advantage of the information contained in the zeros in our sample. In addition, and more important, the PPML estimator successfully handles heteroskedasticity in trade flows data, which, due to Jensen’s inequality, actually renders the corresponding OLS estimates inconsistent. Following the standard approach in the gravity literature, we cluster the standard errors by country pair, i.e., $Cov[\varepsilon_{ijt}, \varepsilon_{ijd}] \neq 0$, for all t, d , and zero otherwise (Egger & Tarlea 2015, Pfaffermayr 2019).

Turning to the policy covariates in our model, the most important variable in equation (1) is the indicator for membership in the OECD, $OECD_{ij,t}$, which takes a value of one if two countries in our sample are members of the OECD at the same time. In addition, we will allow for the effects of the OECD to vary across the 170 industries in the ITPD-E, and we estimate the OECD effects across several broader sectors, by pooling the industry-level data.

The vector $POLICY_{ij,t}$ in equation (1) includes indicator variables for membership in

⁶See the Data Section 3.

⁷Larch et al. (2025) discuss in detail gravity estimations with disaggregated data and they provide a series of arguments in favor of using pooled trade data.

the European Union (EU), membership in Regional Trade Agreements (RTA) *other than the EU*, membership in the World Trade Organization (WTO), complete trade sanctions (*COMPL_SANCT*), partial trade sanctions (*PARTL_SANCT*), sanctions other than trade sanctions (*OTHER_SANCT*), membership in the Euro Zone (EURO), and membership in other currency unions (*COMM_CURR*). Similar to the OECD effects, we will allow for the estimates of the other policy coefficients (α^k) to vary by industry and broader sector.

Equation (1) includes four sets of fixed effects. $GLOB_{ij,t}^k$ denotes a vector of time-varying border indicators, one for each year in our sample, which take a value of one for international flows and are equal to zero for domestic trade flows for each year in our sample.⁸ The estimates on these dummy variables would capture the impact of common (de-)globalization trends that have affected the international relative to the domestic trade, e.g., improvements in communication, transportation, global recessions, etc. Thus, our key OECD variables would capture OECD effects that are in addition to any common globalization trends among the countries in our sample.

Equation (1) includes directional/asymmetric pair fixed effects, $\vec{\mu}_{ij}^k$. Motivated by Baier & Bergstrand (2007), and consistent with the average treatment effects methods of Wooldridge (2010), country-pair fixed effects are standardly used in trade gravity models to mitigate potential endogeneity concerns. Also important for the current purposes, the country-pair fixed effects would absorb and control for all (symmetric and asymmetric) time-invariant bilateral trade costs.⁹ Finally, following (Baier et al. 2019), in order to avoid attributing asymmetries in the underlying time-invariant trade costs to the OECD, we explicitly allow for the country-pair fixed effects for vary depending on the direction of trade flows, i.e., from “i” to “j” vs. from “j” to “i”. This directional nature motivates the arrow notation.

⁸Bergstrand et al. (2015) demonstrate that not accounting for such globalization trends may lead to bias policy estimates in the gravity model.

⁹Egger & Nigai (2015) and Agnosteva et al. (2019) demonstrate that the standard gravity variables (e.g., distance, etc.) do well in predicting relative bilateral trade costs, however, they fail to capture the level of bilateral trade costs (e.g., they underpredict the bilateral trade costs for the poor countries and overpredict them for the more developed countries).

Guided by theory, equation (1) also includes source-industry-time and destination-industry-time fixed effects ($\pi_{i,t}^k$ and $\chi_{j,t}^k$, respectively) to account for structural multilateral resistances terms (Anderson & van Wincoop 2003) and for any country-time-specific determinants of trade flows on the source and the destination side. When the model is estimated with pooled data, the corresponding fixed effects would be at the source-industry-time and the destination-industry-time dimensions, respectively. Thus, regardless of the level of aggregation, the exporter and importer fixed effects would account for and absorb all country-industry-time-specific characteristics that influence bilateral trade flows. This allows us to isolate the remaining bilateral components and identify the effect of the OECD on trade.

3 Data and Sources

To perform the empirical analysis, we compile an unbalanced panel estimating sample for 170 industries over the period 1986-2019, which includes (i) data on bilateral trade flows, (ii) data on OECD membership, and (iii) data on other bilateral policy variables that come from several sources.

Trade data. The data on bilateral trade flows that we employ come from the *International Trade and Production Database for Estimation* (ITPD-E). The ITPD-E was originally developed by Borchert et al. (2021) and, for the current analysis, we use the latest edition of the data (Borchert et al. 2022).¹⁰ The ITPD-E has several advantages for our purposes. First, it covers a large number of countries (more than 200) and industries (170) that cover the entire economy (e.g., including the broad sectors of Agriculture, Mining and Energy, Manufacturing, and Services), and a long timespan (1986-2019), which varies by industry depending on the raw data used. Second, the ITPD-E includes domestic trade flows. As discussed earlier, this may be important for identification purposes. Finally, and most important for our purposes, the ITPD-E is constructed from raw data without reliance on any

¹⁰<https://www.usitc.gov/data/gravity/itpde.htm>

statistical modeling, which makes it appropriate for estimations.¹¹

OECD membership. We construct and experiment with two indicator variables for OECD membership. The first one (‘OECD Accession’) is when the OECD membership enters into force, while the second one (‘OECD Onset’) is constructed by using the initiation of the OECD negotiations as the onset for our OECD indicator.¹² The full set of accession and onset years are reported in Table 1. Based on the history and objectives of the OECD, and given the mechanisms through which we believe that OECD membership may impact trade flows among its members, we selected the ‘OECD Onset’ indicator to perform our main analysis, and we employ the ‘OECD Accession’ dummy in the robustness analysis, which are consistent with our main results and conclusions.

Policy gravity variables. Data on membership in the European Union (EU) and data on membership in the World Trade Organization (WTO) come from the *Dynamic Gravity Dataset* (DGD) of the USITC (Gurevich & Herman 2018).¹³ The indicator variable for countries that use the Euro comes from Fontagne & Yotov (2024), who construct this variable based on data from the European Union.¹⁴ Data on other currency unions were constructed by Jose de Sousa.¹⁵ Data on membership in Regional Trade Agreements (RTAs) are from Egger & Larch (2008).¹⁶ Data on trade and other sanctions are from the latest edition of the *Global Sanctions Database* (Felbermayr et al. 2020, Syropoulos et al. 2024).¹⁷

¹¹ITPD-E is constructed from four main different original sources. For Agriculture the trade and production data come from the Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Manufacturing and Mining and Energy trade data are obtained from the UN Commodity Trade Statistics Database (COMTRADE), while the production data are from the UNIDO United Nations Industrial Statistics (INDSTAT) Database. For services trade, ITPD-E uses information from the WTO-UNCTAD-ITC Annual Trade in Services Database and the UN Trade in Services Database (UN TSD). Services gross output data are from the UN System of National Accounts (UN SNA) Database. See Borchert et al. (2021) and (Borchert et al. 2022) for further details on the construction and features of the ITPD-E.

¹²We are very grateful to Ema Ivanova for collecting these data.

¹³<https://www.usitc.gov/data/gravity/dgd.htm>

¹⁴https://european-union.europa.eu/institutions-law-budget/euro/countries-using-euro_en

¹⁵<http://jdesousa.univ.free.fr/data.htm>

¹⁶<https://www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html>

¹⁷<https://www.globalsanctionsdatabase.com/>

4 Estimation Results and Analysis

We present and discuss our empirical findings in two steps. First, following Rose (2005), we obtain average estimates of the OECD effects on trade across all members. Then, we zoom in on the OECD effects on trade for two specific groups of countries (the Visegrád group and the Baltic states), whose trade we believe may have been affected differentially by the OECD due to the original objectives of the OECD and because of the mechanisms through which we expect that the OECD may promote trade among its members.

The overall OECD effects. To obtain our benchmark OECD results, we use a single ‘OECD Onset’ indicator variable and we capitalize on the separability property of the structural gravity model to estimate equation (1) for each of the 170 industries in our sample. The results for each of the 170 ITPD-E industries are reported in Table 2. These estimates, in increasing order based on their magnitudes, are visualized in the top panel of Figure 1. In addition, for clarity, in the bottom panel of Figure 1 we have eliminated the top and bottom 5% of outlier estimates.

The main takeaway from Table 2 and Figure 1 is that most of the OECD estimates are economically small in terms of magnitude, and most are not statistically significant. Thus, based on these results, we conclude that, overall, the OECD has not had a significant impact on promoting trade among its members. This conclusion is in contrast to the main finding from Rose (2005), Davis & Gowa (2013), and Chen & Novy (2022). However, we do see positive and significant estimates for some industries. Moreover, it is possible that our average OECD estimates mask heterogeneous effects for certain groups of countries. We explore each of these hypotheses in the second part of our analysis.

In order to gain estimation efficiency and to aid the interpretation of our results, we obtain more aggregate ‘sectoral’ estimates. To this end, rather than aggregating the original industry-level data, we pool together individual industries into 18 sectors, including Agriculture, Mining and Energy, Services, and 15 Manufacturing sectors. Guided by theory, each

of the fixed effects from equation (1) now also varies across the industry dimension, i.e., the pooled regressions for each sector include exporter-industry-time, importer-industry-time, and country-pair-industry fixed effects. Our findings appear in column (1) of Table 3, and they are visualized in Figure 2.

We draw three main conclusions based on the sectoral estimates from Table 3 and Figure 2. First, consistent with the industry-level results that we obtained earlier, most of the sectoral estimates (almost two thirds) are not statistically significant. However, second, we also obtain several estimates (i.e., for ‘Food’, ‘Beverages and Tobacco’, ‘Wood’, ‘Paper’, and ‘Rubber and Plastic’), which are relatively small as compared to Rose’s (2005) result but, nevertheless, positive and statistically significant. For example, trade flows in the ‘Food’ and ‘Beverages and Tobacco’ sectors increased by roughly 27%, while the ‘Paper’ and ‘Wood’ sectors saw an increases in trade of 21% and 25%, respectively. The implication is that the OECD may have been efficient in promoting members’ trade in certain sectors. Such positive effects could be due to specific efforts directed at trade in these particular sectors, such as trade facilitation programs (for which we do not have evidence), or due to comparative advantages of certain groups of countries (e.g., poorer OECD members), whose trade increased after joining the OECD.

Finally, we also obtain two negative and statistically significant sectoral OECD estimates, for ‘Apparel and Footwear’ and for ‘Electronics’. Inspection of the underlying industry-level results reinforces these findings by revealing that all of the industry estimates within each broader category are actually negative and some of them are also statistically significant. We do not have a good intuition for these results. However, given our econometric model and identification strategy, a possible mechanical explanation for the negative estimates is that OECD membership has promoted domestic sales in ‘Apparel and Footwear’ and ‘Electronics’ disproportionately.

The OECD impact on the Visegrád group and the Baltic states. In our next experiment, we focus on two specific groups of OECD members – the Visegrád group and the Baltic

states. The motivation for this analysis is twofold. First, this is consistent with the hypothesis that the OECD membership may be more effective in promoting trade for countries that are poorer and have weaker institutions, e.g., by signaling lowering uncertainty, stability, and improved institutional quality. Second, focusing on these countries is also consistent with the original goals of the OECD to foster collaboration among the European nations. The motivation for splitting these European countries in two separate groups is based on geographic proximity, economic similarity, the time when they joined to the OECD (e.g., the Baltic states joined later), level of integration within Europe, and the structural economic changes that they have experienced (e.g., these countries transitioned from centrally planned to market economies, and are the only OECD member states that share this feature).

We start by analyzing the OECD effects on the trade of the group of Visegrád member states (Czech Republic, Slovakia, Poland, and Hungary), which joined the OECD between 1995 and 2000, before becoming part of the EU in the 2004 A10 Eastern Enlargement. To obtain our Visegrád estimates, we amend specification (1) in two ways. First, we split the single OECD indicator from the earlier estimations to allow for separate/heterogeneous OECD effects for the Visegrád group vs. all other OECD members. Second, to mitigate concerns that the new Visegrád estimates may be driven by potentially heterogeneous EU effects, we also allow for heterogeneous EU effects for the Visegrád countries vs. all other EU members.

The new OECD estimates appear in panel B of Table 3 and they are visualized in Figure 3. To ease comparisons, Table 3 presents the results for Visegrád vs. all other OECD members in two columns, i.e., columns (2) and (3), however, all results in panel B are obtained from a single specification. Similarly, the top panel of Figure 3 only includes the estimates of the OECD effects for the Visegrád countries, while the bottom panel of the figure includes both the results for the Visegrád group vs. all other OECD members.

We draw the following conclusions based on these results. First, OECD membership has had a positive overall impact on the trade of the Visegrád countries with other OECD

members. This is supported by the fact that all but four of the Visegrád estimates are positive and many of them are statistically significant. Second, on a related note and as can be seen from the bottom panel of Figure 3, most of the Visegrád estimates are larger (more positive) than the corresponding effects on the rest of the OECD countries. Third, the effects of the OECD on the Visegrád countries have been very heterogeneous across sectors. Specifically, our estimates suggest that the biggest increase in trade has been in the ‘Transportation’ (89.27%), ‘Beverages and Tobacco’ (55.89%), and ‘Machinery’ (37.44%) sectors, while trade in ‘Agriculture’ has fallen. Notably, some of the positive estimates are large in magnitude (e.g., the estimates for ‘Transportation’ and ‘Machinery’), and they are comparable to the average OECD estimate from Rose (2005).

Panel C of Table 3 and Figure 4 present our estimates for the Baltic states (Estonia, Latvia, and Lithuania), which joined the OECD later than the Visegrád countries (i.e., between 2010 and 2018) and after becoming EU members. The main messages from the estimates for the Baltic states are that: (i) Overall, OECD membership has benefited the trade of the Baltic states with other OECD members. This is supported by the fact that most of the estimates for the Baltic states are positive, sizable, and statistically significant, and we do not obtain any negative and statistically significant estimates; (ii) The gains for the Baltic states have been larger than those for other OECD members, including the Visegrád group (e.g., consider the estimates for ‘Transportation’); (iii) The OECD effects have been quite heterogeneous across sectors. Similar to our findings for the Visegrád group, the largest trade-promoting effects for the Baltic states are in the ‘Transportation’ (114.68%), ‘Beverages and Tobacco’ (88.70%), and ‘Machinery’ (66.86%) sectors, but also in ‘Mineral Products’ (52.50%), ‘Rubber and Plastic’ (30.87%), and ‘Services’ (43.33%), while the smallest effects are in ‘Textiles’ and ‘Apparel and Footwear’.

5 Conclusion

Using disaggregated data and updated estimation methods, we conclude that, overall, the OECD has not led directly to decreased bilateral trade costs and increased international trade among its members. However, we also provide evidence that OECD membership has promoted members' trade in certain sectors and, more importantly, for certain groups of countries. Specifically, we find that OECD membership has led to increased trade for the countries in the Visegrád group (i.e., Czech Republic, Slovakia, Poland, and Hungary) and, even more so, for the Baltic states (e.g., Estonia, Latvia, and Lithuania). Since we are not aware of specific OECD targets and explicit efforts to directly decrease bilateral trade costs among its members in general and for Visegrád and Baltic states in particular, we conclude that the positive trade effects of OECD membership for the Visegrád group and the Baltic states are driven by indirect channels, which could include signaling lowering uncertainty, economic stability, improved institutional quality, transparency, and regulatory cooperation. Therefore, we anticipate that similar positive trade effects can be expected for prospective OECD members, especially those (e.g., Bulgaria, Croatia, and Romania) that share many economic and historical similarities with the Visegrád and Baltic states.

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Table 1: OECD Membership Accession and Onset Data

Country Code	Country Name	Year of Entry	Onset
AUS	Australia	1971	1971
AUT	Austria	1961	1961
BEL	Belgium	1961	1961
CAN	Canada	1961	1961
CHL	Chile	2010	2007
COL	Colombia	2020	2013
CRI	Costa Rica	2021	2015
CZE	Czech Republic	1995	1994
DNK	Denmark	1961	1961
EST	Estonia	2010	2007
FIN	Finland	1969	1969
FRA	France	1961	1961
DEU	Germany	1971	1971
GRC	Greece	1961	1961
HUN	Hungary	1996	1994
ISL	Iceland	1961	1961
IRL	Ireland	1971	1971
ISR	Israel	2010	2007
ITA	Italy	1962	1962
JPN	Japan	1964	1964
KOR	Korea	1996	1993
LVA	Unknown	2016	2013
LTU	Unknown	2018	2015
LUX	Luxembourg	1961	1961
MEX	Mexico	1994	1993
NLD	Netherlands	1961	1961
NZL	New Zealand	1973	1973
NOR	Norway	1961	1961
POL	Poland	1996	1994
PRT	Portugal	1961	1961
SVK	Slovakia	2000	1994
SVN	Slovenia	2010	2007
ESP	Spain	1961	1961
SWE	Sweden	1961	1961
CHE	Switzerland	1961	1961
TUR	Turkey	1961	1961
GBR	United Kingdom	1961	1961
USA	United States	1961	1961

Notes: This table reports the year of accession (entry into force) and onset of OECD member countries. Country codes follow the ISO3 standard. Onset years represent the start of practical or preparatory participation, which may differ from formal entry.

Table 2: Industry-level OECD Estimates

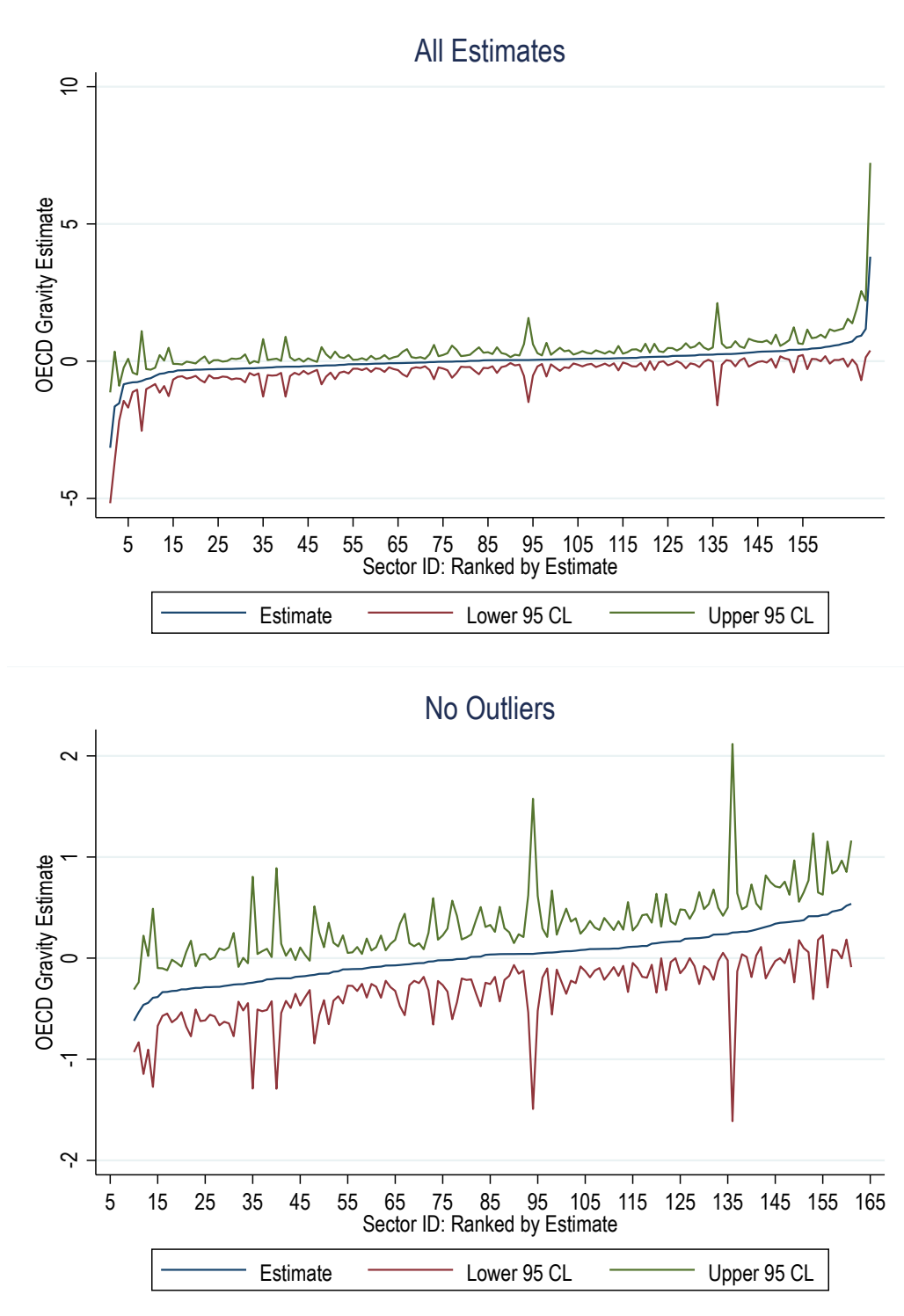
Industry ID	Industry Description	Broad Sector	Estimate	Std.Err.
1	Wheat	Agriculture	0.460	(.19)*
2	Rice (raw)	Agriculture	0.430	(.37)
3	Corn	Agriculture	0.410	(.42)
4	Other cereals	Agriculture	-0.280	(.19)
5	Cereal products	Agriculture	-0.800	(.45)
6	Soybeans	Agriculture	-0.390	(.45)
7	Other oilseeds (excluding peanuts)	Agriculture	0.360	(.31)
8	Animal feed ingredients and pet foods	Agriculture	-0.130	(.15)
9	Raw and refined sugar and sugar crops	Agriculture	-1.650	(1.02)
10	Other sweeteners	Agriculture	-0.170	(.35)
11	Pulses and legumes, dried, preserved	Agriculture	0.570	(.27)*
12	Fresh fruit	Agriculture	-0.320	(.14)*
13	Fresh vegetables	Agriculture	-0.160	(.21)
14	Prepared fruits and fruit juices	Agriculture	0.150	(.25)
15	Prepared vegetables	Agriculture	0.0400	(.78)
16	Nuts	Agriculture	0.350	(.21)
17	Live Cattle	Agriculture	0.0400	(.3)
18	Live Swine	Agriculture	-0.200	(.56)
19	Eggs	Agriculture	0.230	(.23)
20	Other meats, livestock products, and live animals	Agriculture	-0.200	(.15)
21	Cocoa and cocoa products	Agriculture	-3.150	(1.03)**
22	Beverages, nec	Agriculture	-0.290	(.17)
23	Cotton	Agriculture	-0.440	(.24)
24	Tobacco leaves and cigarettes	Agriculture	-0.0700	(.21)
25	Spices	Agriculture	0.0400	(.13)
26	Other agricultural products, nec	Agriculture	0.0800	(.11)
27	Forestry	Agriculture	0.0700	(.21)
28	Fishing	Agriculture	-0.260	(.26)
29	Mining of hard coal	Mining and Energy	0.0600	(.31)
30	Mining of lignite	Mining and Energy	1.180	(.53)*
31	Extraction crude petroleum and natural gas	Mining and Energy	0.0400	(.24)
32	Mining of iron ores	Mining and Energy	-0.0300	(.32)
33	Other mining and quarrying	Mining and Energy	0.0900	(.13)
34	Electricity production, collection, and distribution	Mining and Energy	0.670	(.45)
35	Gas production and distribution	Mining and Energy	3.810	(1.74)*
36	Processing/preserving of meat	Manufacturing	0.210	(.17)
37	Processing/preserving of fish	Manufacturing	0.350	(.18)*
38	Processing/preserving of fruit and vegetables	Manufacturing	0.0900	(.09)
39	Vegetable and animal oils and fats	Manufacturing	0.320	(.22)
40	Dairy products	Manufacturing	0.0700	(.15)
41	Grain mill products	Manufacturing	0.410	(.18)*
42	Starches and starch products	Manufacturing	-0.0200	(.16)
43	Prepared animal feeds	Manufacturing	0.120	(.16)
44	Bakery products	Manufacturing	0.170	(.08)
45	Sugar	Manufacturing	0.340	(.19)
46	Cocoa chocolate and sugar confectionery	Manufacturing	-0.110	(.08)
47	Macaroni noodles and similar products	Manufacturing	0.0900	(.14)
48	Other food products n.e.c.	Manufacturing	0.300	(.09)**
49	Distilling rectifying and blending of spirits	Manufacturing	0.520	(.17)**
50	Wines	Manufacturing	-0.0300	(.14)
51	Malt liquors and malt	Manufacturing	0.120	(.16)
52	Soft drinks; mineral waters	Manufacturing	-0.230	(.14)
53	Tobacco products	Manufacturing	0.540	(.32)
54	Textile fibre preparation; textile weaving	Manufacturing	0.0400	(.1)
55	Made-up textile articles except apparel	Manufacturing	-0.310	(.12)**
56	Carpets and rugs	Manufacturing	-0.310	(.19)
57	Cordage rope twine and netting	Manufacturing	0.240	(.13)
58	Other textiles n.e.c.	Manufacturing	-0.0600	(.11)
59	Knitted and crocheted fabrics and articles	Manufacturing	0.0300	(.14)
60	Wearing apparel except fur apparel	Manufacturing	-0.320	(.16)*
61	Dressing and dyeing of fur; processing of fur	Manufacturing	-1.530	(.32)****
62	Tanning and dressing of leather	Manufacturing	-0.280	(.18)
63	Luggage handbags etc.; saddlery and harness	Manufacturing	-0.760	(.14)****
64	Footwear	Manufacturing	-0.260	(.13)
65	Sawmilling and planing of wood	Manufacturing	0.360	(.14)**
66	Veneer sheets plywood particle board etc.	Manufacturing	0.200	(.14)
67	Builders' carpentry and joinery	Manufacturing	-0.0200	(.13)
68	Wooden containers	Manufacturing	0.0700	(.15)
69	Other wood products; articles of cork/straw	Manufacturing	-0.210	(.11)
70	Pulp paper and paperboard	Manufacturing	0.260	(.11)*
71	Corrugated paper and paperboard	Manufacturing	0.160	(.1)
72	Other articles of paper and paperboard	Manufacturing	-0.0100	(.1)
73	Publishing of books and other publications	Manufacturing	0.0600	(.09)
74	Publishing of newspapers journals etc.	Manufacturing	0.0100	(.18)
75	Publishing of recorded media	Manufacturing	-0.300	(.24)
76	Other publishing	Manufacturing	-0.0800	(.16)
77	Printing	Manufacturing	0.260	(.13)*
78	Service activities related to printing	Manufacturing	-0.0100	(.22)
79	Coke oven products	Manufacturing	-0.840	(.31)**
80	Refined petroleum products	Manufacturing	0.0100	(.11)
81	Processing of nuclear fuel	Manufacturing	-0.240	(.53)
82	Basic chemicals except fertilizers	Manufacturing	-0.0700	(.08)
83	Fertilizers and nitrogen compounds	Manufacturing	-0.280	(.15)
84	Plastics in primary forms; synthetic rubber	Manufacturing	-0.0900	(.08)
85	Pesticides and other agro-chemical products	Manufacturing	0.190	(.1)*
86	Paints varnishes printing ink and mastics	Manufacturing	-0.0100	(.11)
87	Pharmaceuticals medicinal chemicals etc.	Manufacturing	0.150	(.08)
88	Soap cleaning and cosmetic preparations	Manufacturing	0.0800	(.08)

Continued on next page

89	Other chemical products n.e.c.	Manufacturing	0.0400	(.15)
90	Man-made fibres	Manufacturing	0.0700	(.16)
91	Rubber tyres and tubes	Manufacturing	0.370	(.1)***
92	Other rubber products	Manufacturing	-0.110	(.08)
93	Plastic products	Manufacturing	0.0400	(.06)
94	Glass and glass products	Manufacturing	0.110	(.08)
95	Pottery china and earthenware	Manufacturing	-0.230	(.15)
96	Refractory ceramic products	Manufacturing	0.170	(.16)
97	Struct.non-refractory clay; ceramic products	Manufacturing	-0.0700	(.13)
98	Cement lime and plaster	Manufacturing	0.590	(.28)*
99	Articles of concrete cement and plaster	Manufacturing	0.280	(.13)*
100	Cutting shaping and finishing of stone	Manufacturing	-0.650	(.19)***
101	Other non-metallic mineral products n.e.c.	Manufacturing	0.100	(.09)
102	Basic iron and steel	Manufacturing	0.110	(.11)
103	Basic precious and non-ferrous metals	Manufacturing	-0.150	(.13)
104	Structural metal products	Manufacturing	0.430	(.1)***
105	Tanks reservoirs and containers of metal	Manufacturing	0.0500	(.12)
106	Steam generators	Manufacturing	0.470	(.2)*
107	Cutlery hand tools and general hardware	Manufacturing	-0.0200	(.1)
108	Other fabricated metal products n.e.c.	Manufacturing	-0.190	(.09)*
109	Engines and turbines (not for transport equipment)	Manufacturing	-0.270	(.19)
110	Pumps compressors taps and valves	Manufacturing	0.0400	(.08)
111	Bearings gears gearing and driving elements	Manufacturing	0.0900	(.1)
112	Ovens furnaces and furnace burners	Manufacturing	-0.380	(.15)**
113	Lifting and handling equipment	Manufacturing	-0.460	(.35)
114	Other general purpose machinery	Manufacturing	-0.0500	(.07)
115	Agricultural and forestry machinery	Manufacturing	0.240	(.09)*
116	Machine tools	Manufacturing	0.0500	(.08)
117	Machinery for metallurgy	Manufacturing	-0.0600	(.26)
118	Machinery for mining and construction	Manufacturing	0.0400	(.11)
119	Food/beverage/tobacco processing machinery	Manufacturing	0.140	(.11)
120	Machinery for textile apparel and leather	Manufacturing	0.260	(.2)
121	Weapons and ammunition	Manufacturing	0.0500	(.29)
122	Other special purpose machinery	Manufacturing	-0.110	(.08)
123	Domestic appliances n.e.c.	Manufacturing	-0.0500	(.1)
124	Office accounting and computing machinery	Manufacturing	-0.200	(.11)
125	Electric motors generators and transformers	Manufacturing	-0.110	(.11)
126	Electricity distribution and control apparatus	Manufacturing	-0.170	(.07)*
127	Insulated wire and cable	Manufacturing	-0.0500	(.09)
128	Accumulators primary cells and batteries	Manufacturing	-0.0700	(.11)
129	Lighting equipment and electric lamps	Manufacturing	-0.330	(.11)**
130	Other electrical equipment n.e.c.	Manufacturing	-0.100	(.15)
131	Electronic valves tubes etc.	Manufacturing	-0.290	(.14)*
132	TV/radio transmitters; line comm. apparatus	Manufacturing	-0.770	(.18)***
133	TV and radio receivers and associated goods	Manufacturing	-0.340	(.12)**
134	Medical surgical and orthopaedic equipment	Manufacturing	-0.180	(.11)
135	Measuring/testing/navigating appliances etc.	Manufacturing	-0.210	(.15)
136	Optical instruments and photographic equipment	Manufacturing	-0.180	(.15)
137	Watches and clocks	Manufacturing	-0.620	(.16)***
138	Motor vehicles	Manufacturing	0.0900	(.14)
139	Automobile bodies trailers and semi-trailers	Manufacturing	-0.290	(.17)
140	Parts/accessories for automobiles	Manufacturing	0.190	(.15)
141	Building and repairing of ships	Manufacturing	0.480	(.25)
142	Building/repairing of pleasure/sport. boats	Manufacturing	-0.110	(.17)
143	Railway/tramway locomotives and rolling stock	Manufacturing	0.270	(.23)
144	Aircraft and spacecraft	Manufacturing	0.110	(.23)
145	Motorcycles	Manufacturing	0.420	(.12)***
146	Bicycles and invalid carriages	Manufacturing	0.230	(.13)
147	Other transport equipment n.e.c.	Manufacturing	-0.540	(.15)***
148	Furniture	Manufacturing	-0.260	(.09)**
149	Jewellery and related articles	Manufacturing	0.0900	(.11)
150	Musical instruments	Manufacturing	-0.250	(.1)*
151	Sports goods	Manufacturing	-0.0900	(.1)
152	Games and toys	Manufacturing	-0.200	(.17)
153	Other manufacturing n.e.c.	Manufacturing	-0.290	(.11)**
154	Manufacturing services on physical inputs	Services	0.930	(.83)
155	Maintenance and repair services n.i.e.	Services	-0.150	(.26)
156	Transport	Services	-0.130	(.13)
157	Travel	Services	0.0400	(.11)
158	Construction	Services	0.720	(.34)*
159	Insurance and pension services	Services	-0.0200	(.3)
160	Financial services	Services	0.160	(.24)
161	Charges for use of intellectual property	Services	0.890	(.52)
162	Telecom, computer, information services	Services	0.200	(.14)
163	Other business services	Services	0.0900	(.16)
164	Heritage and recreational services	Services	0.250	(.95)
165	Health services	Services	0.0200	(.25)
166	Education services	Services	0.310	(.26)
167	Government goods and services n.i.e.	Services	0.200	(.23)
168	Services not allocated	Services	0.380	(.14)**
169	Trade-related services	Services	0.640	(.28)*
170	Other personal services	Services	-0.720	(.93)

Notes: This table reports industry-level estimates of the impact of the OECD on international trade. Columns (1)-(3) list the industry IDs, the industry descriptions, and the broad sector descriptions from the ITPD-E. Columns (4) and (5) report the industry-level estimates of the OECD effects on trade and their standard errors, respectively. The standard errors in both specifications are clustered by country pair. See text for further details.

Figure 1: The OECD Effects on Trade



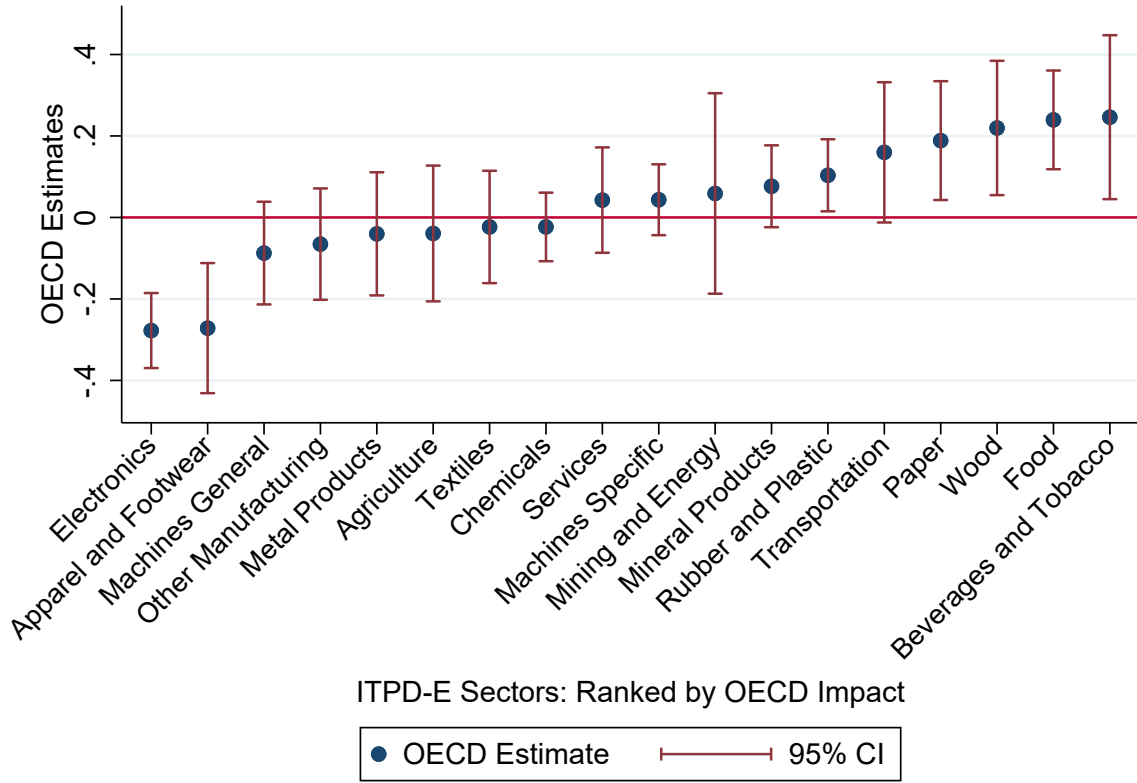
Note: This figure visualizes the results from columns (4) and (5) of Table 2.

Table 3: Combined Sector-wise Estimates with Standard Errors

Sector	Panel A	Panel B		Panel C	
	(1) OECD	(2) Visegrad	(3) V-Other	(4) Baltic	(5) B-Other
Agriculture	-0.039 (0.085)	-0.180* (0.084)	-0.023 (0.091)	0.029 (0.112)	-0.048 (0.094)
Mining and Energy	0.059 (0.126)	0.435 (0.338)	0.049 (0.127)	1.388 (0.771)	0.030 (0.124)
Food	0.240*** (0.062)	0.210** (0.070)	0.245*** (0.066)	0.204** (0.078)	0.254*** (0.074)
Beverages and Tobacco	0.246* (0.103)	0.444*** (0.134)	0.215 (0.110)	0.635** (0.208)	0.062 (0.104)
Textiles	-0.023 (0.070)	0.160 (0.118)	-0.042 (0.073)	-0.041 (0.099)	-0.018 (0.078)
Apparel and Footwear	-0.272*** (0.081)	0.161 (0.255)	-0.333*** (0.070)	-0.025 (0.088)	-0.304** (0.093)
Wood	0.220** (0.084)	0.189* (0.092)	0.232* (0.090)	0.269* (0.105)	0.220* (0.112)
Paper	0.189* (0.074)	0.120 (0.095)	0.199* (0.078)	0.265** (0.087)	0.171* (0.082)
Chemicals	-0.023 (0.043)	-0.068 (0.064)	-0.017 (0.045)	-0.071 (0.124)	-0.016 (0.044)
Rubber and Plastic	0.103* (0.045)	0.131 (0.093)	0.102* (0.046)	0.269*** (0.081)	0.080 (0.050)
Mineral Products	0.077 (0.051)	0.165* (0.067)	0.060 (0.055)	0.422*** (0.081)	0.004 (0.060)
Metal Products	-0.040 (0.077)	0.210* (0.096)	-0.060 (0.079)	0.168 (0.089)	-0.062 (0.084)
Machines General	-0.087 (0.064)	0.190 (0.130)	-0.111 (0.065)	0.512*** (0.076)	-0.181* (0.071)
Machines Specific	0.043 (0.044)	0.318*** (0.089)	0.019 (0.045)	0.213** (0.077)	0.022 (0.049)
Electronics	-0.278*** (0.047)	-0.015 (0.075)	-0.297*** (0.048)	0.209 (0.115)	-0.332*** (0.050)
Transportation	0.160 (0.088)	0.638*** (0.143)	0.122 (0.089)	0.764*** (0.140)	0.088 (0.096)
Other Manufacturing	-0.065 (0.070)	-0.008 (0.118)	-0.068 (0.072)	0.058 (0.072)	-0.073 (0.077)
Services	0.043 (0.066)	0.109 (0.088)	0.040 (0.068)	0.360*** (0.071)	-0.169 (0.097)

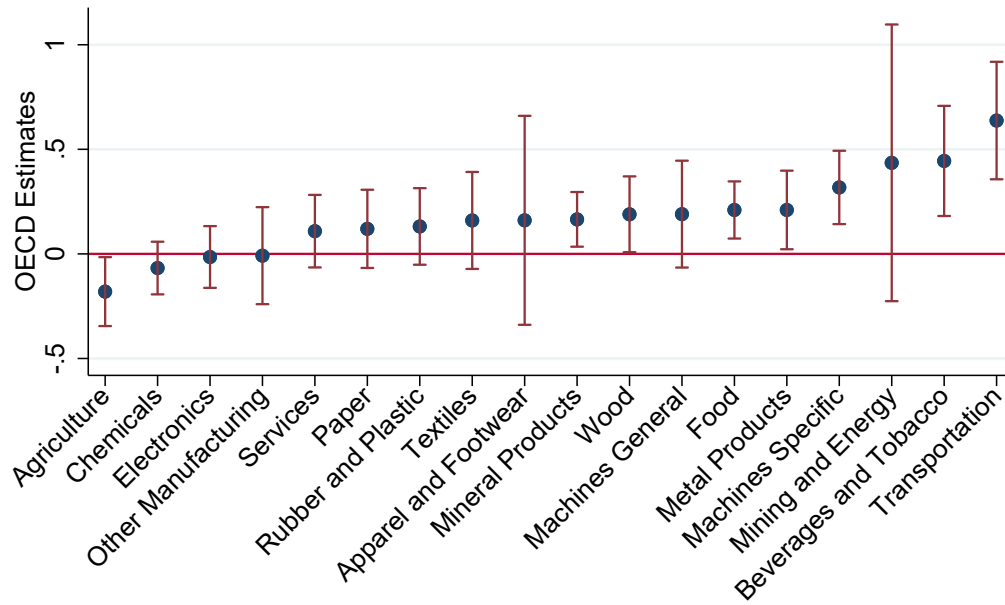
Notes: This table combines sector-wise estimates from multiple sources. Standard errors are in parentheses. Stars denote levels of statistical significance (* 10%, ** 5%, *** 1%).

Figure 2: Sector-level OECD Estimates

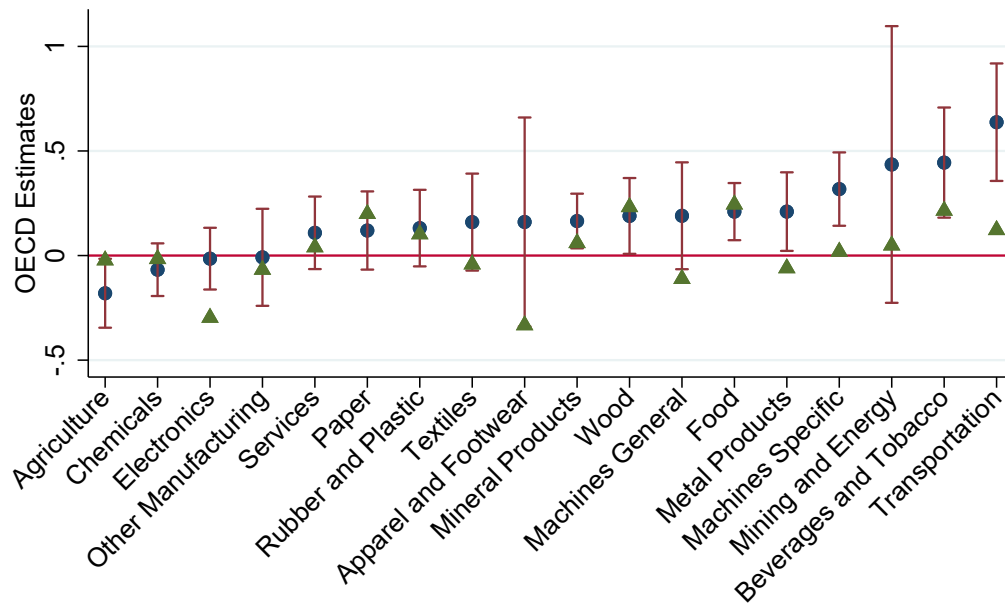
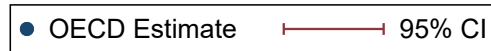


Note: This figure visualizes the sectoral estimates of the OECD effects from column (1) of Table 3. The dependent variable is trade in levels and the PPML estimates for each sector are obtained with exporter-industry-time fixed effects, importer-industry-time fixed effects, directional pair-industry fixed effects, time-industry-varying border indicators, and a series of policy controls, whose estimates are omitted for brevity. Standard errors are clustered by pair-industry. See text for further details.

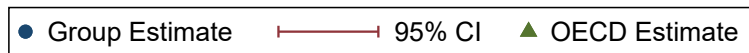
Figure 3: Sectoral OECD Estimates, Visegrád Group



ITPD-E Sectors: Ranked by OECD Impact

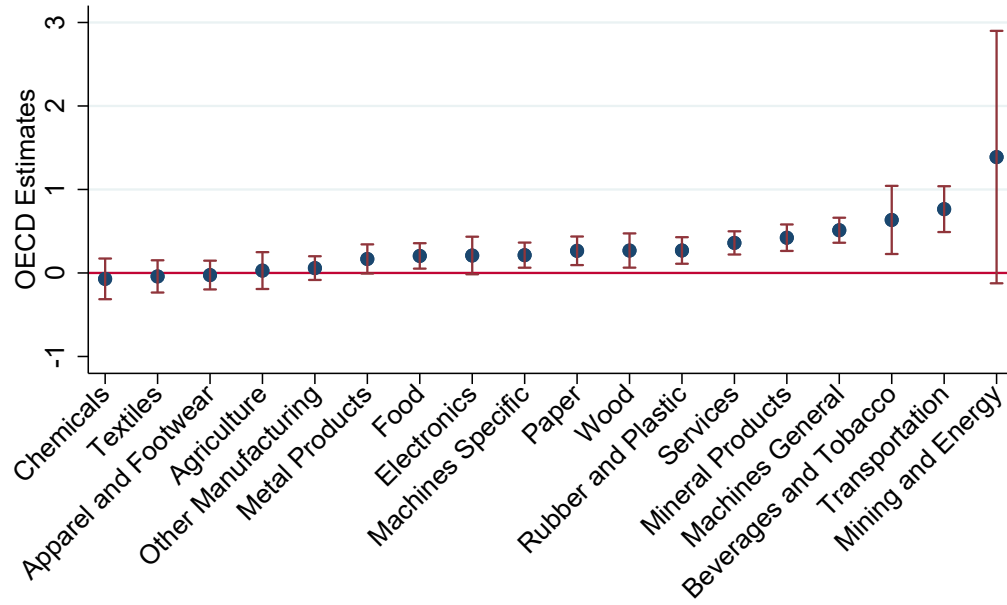


ITPD-E Sectors: Ranked by OECD Impact

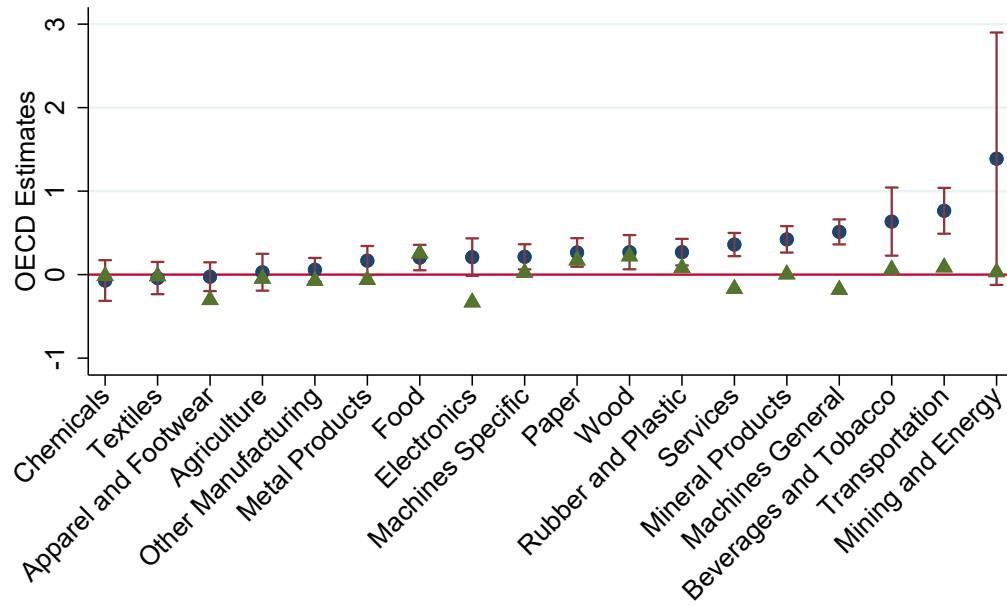
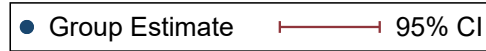


Note: This figure visualizes the results from columns (2) and (3) of Table 3.

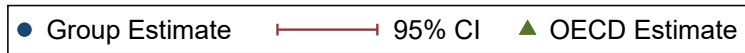
Figure 4: Sectoral OECD Estimates, Baltic States



ITPD-E Sectors: Ranked by OECD Impact



ITPD-E Sectors: Ranked by OECD Impact



Note: This figure visualizes the results from columns (4) and (5) of Table 3.