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Asymmetric Impacts of Economic Integration: The Case of the Single European Market

Lionel Fontagné
Krasimir Shishmanov
Penka Shishmanova
Yoto V. Yotov

DREXEL UNIVERSITY
Center for
Global Policy Analysis
LeBow College of Business

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Lionel Fontagné
Paris School of Economics

Krasimir Shishmanov
Tsenov Academy of Economics

Penka Shishmanova
Tsenov Academy of Economics

Yoto V. Yotov*
Drexel University

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Abstract

Economic gains from trade integration channel through inward or outward multilateral resistance terms, hence through consumption or production effects. But these impacts differ in their relative intensity among members of the integrated region, which leads to asymmetric outcomes. We study these asymmetric effects of European integration on the exports vs. imports of the members of the Single Market and obtain disaggregated asymmetric EU estimates for 170 industries. The econometric analysis delivers a rich database of more than 9,300 estimates of the EU effects on trade among its members. Three main findings emerge from our analysis. First, previous estimates where asymmetries were silenced underestimated the gains from EU integration. Second, these asymmetries in the effects of the Single Market on the members' trade are very large. Third, the EU has benefited disproportionately the consumers in older/richer members and the producers in the new/poorer joiners.

JEL Classification Codes: F10, F14, F16
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*Contact information: Fontagné: Paris School of Economics, France. E-mail: lionel.fontagne@psemail.eu. Shishmanov: Centre for Innovative Educational Technologies, D.A. Tsenov Academy of Economics, Bulgaria. E-mail: k.shishmanovuni-svishtov.bg. Shishmanova: Department of General Economic Theory, D.A. Tsenov Academy of Economics, Bulgaria. E-mail: p.shishmanovauni-svishtov.bg. School of Economics, Drexel University, USA. E-mail: yotov@drexel.edu. Lionel Fontagné thanks the support of the EUR grant ANR-17-EURE-0001 and the Institute for Macroeconomic and International policies, i-MIP.

1 Introduction

In 1973, Denmark, Ireland and the United Kingdom joined the six founding members of the European Economic Community. It would take another thirteen years before the Single European Act was adopted, paving the way for the creation of the Single Market through a vast program to reduce the remaining obstacles to intra-European movement for people, goods, services and capital. This act, which re-founded the Common Market, set January 1, 1993 as the deadline for implementing these reforms.

Taking stock of 30 years of this unique experience of deep economic and monetary integration, two reports have raised the question of how to reinvigorate this process. In April 2024, Enrico Letta headlined "Much more than a market", seeing the deepening of the Single Market as the sine qua non for "playing in the champions league". In September 2024, Mario Draghi dramatized the situation in order to stimulate a rebound: Member states would be condemned to choose between declassification, exit and the forward march of integration. The recommendations of these tow reports translated in May 2025 in a Communication from the Commission to the European Parliament and the Council that proposed a wide-ranging program of reforms aimed at relaunching European integration in the direction of simplification and reinforcement[1]. Important for us, after recalling the economic size of the Single Market, this communication highlighted both the gains achieved to date and future gains, citing respectively the work of Head and Mayer (2021) and Fontagné and Yotov (2025). Additional important landmarks in this appraisal of the impact of the Single market are (Fontagné et al., 1998; Felbermayr et al., 2022; Santamaría et al., 2023; Nagengast et al., 2024; Fontagné and Yotov, 2024).

Most of the available evaluations rely on structural gravity and New Quantitative Trade Models, which have common theoretical foundations (Anderson and van Wincoop, 2003). In this framework, gains channel through the valuation of imports and exports, or respec-

[1]European Commission: The Single Market: our European home market in an uncertain world. A Strategy for making the Single Market simple, seamless and strong. Brussels, 21.5.2025 COM(2025) 500 final.

tively through consumption or production gains – namely Terms of Trade gains (Anderson and Yotov, 2016). The estimated impact of the EU is therefore an average of the two, which hardly informs on possible asymmetric effects among heterogeneous countries. The Single Market, consecutive to successive enlargements, has profoundly reshaped the geography of sectoral value added in Europe, potentially leading to asymmetries in gains on the consumption *versus* production side among Member States. Therefore, instead of asking whether "new" and "old" Member States reaped gains of different magnitudes, we need to characterize the type of gains obtained by the two.

Against this backdrop, the contribution of our paper is to obtain estimates of the asymmetric effects of the Single Market on the exports vs. imports for each Member State with the rest of the EU members. To pursue this objective, we use the industry-level International Trade and Production Database for Estimation (ITPD-E) of the U.S. International Trade Commission (Borchert et al., 2020, 2022), and we estimate a gravity equation for each of the 170 ITPD-E industries following the recommendations from Larch et al. (2025). In combination, our data and methods deliver more than 9,300 directional country-industry specific estimates of the impact of the Single Market on members' trade, which, to our knowledge, is the richest set of estimates of the EU effects on trade to date.

We draw several conclusions based on our asymmetric EU estimates. First, we obtain large, positive, and statistically significant estimates of the impact of the EU on members' trade. Specifically, according to our estimates, the Single Market has led to about a 92 percent increase in members' trade, i.e., the EU has almost doubled trade among its members.[2] While the result that the EU has been very successful in promoting trade among its members is not new to the literature, a novel and important implication of our findings is that, on average, our disaggregated and asymmetric EU estimates are significantly *larger* than corresponding estimates that do not allow for asymmetries (Fontagné and Yotov, 2024).

[2]We also obtain large but quite heterogeneous estimates of the EU effects for each of the four broad sectors in our data. Specifically, we find that the EU has lead to an increase in the trade volume by 550% in Agriculture, 238% in Mining and Energy, 48% in Manufacturing, and 194% in Services.

This result points to possible downward biases in existing EU estimates and reinforces the importance of allowing for asymmetric EU effects. In turn, the larger EU effects that we obtain have significant implications for the welfare impact of the EU.

Second, and most significant for our purposes, our estimates reveal that the effects of the EU on each member's trade have been very asymmetric depending on the direction of trade flows. We find that the EU effects for the older and richer member states have been systematically stronger in promoting their imports, while the opposite is true for the smaller and more recent EU joiners.

Third, this result has potentially important implications for the welfare and distributional effects of the EU, e.g., because a very asymmetric impact in favor of imports will benefit the consumers, but not so much the producers in a given country and industry. The implication of this result is that EU membership has benefited disproportionately the consumers in the richer/older members and the producers in the newer/poorer joiners.

Our paper is related to two strands of the literature. First, we speak to the literature that has focused on the impact of the EU on members' trade (e.g. Fontagné et al. (1998); Mayer et al. (2019); Head and Mayer (2021)). Most closely related to us, in terms of data and methods, are recent papers by Fontagné and Yotov (2024, 2025). Our contribution relative to this literature is that we are the first to obtain asymmetric estimates of the EU effects on the exports vs. imports of its members. Our most novel finding is that the EU effects have been quite asymmetric and our results imply that more aggregate EU estimates may be biased downward.

In terms of methods, our work is related to the broader gravity literature on the impact of regional trade agreements (e.g. Baier and Bergstrand (2007); Anderson and Yotov (2016); Baier et al. (2019)),[3] and our contribution to this literature is the specific focus on the Single Market and the use of disaggregated data. As a result, we obtain a very large number of asymmetric EU effects that can be used to study the determinants of these asymmetries and

[3]Larch and Yotov (2024) offer a survey of the evolution of the methods to estimate the impact of regional trade agreements (RTAs) over the past 60 years.

of the forces behind the success of EU integration more broadly.

The rest of the paper is organized as follows. Section 2 describes our econometric methods. Section 3 offers a brief description of the datasets that we used to perform the analysis, and their sources. Section 4 presents our estimates of the asymmetric effects of the EU. Section 5 concludes with a brief summary of our main findings and a discussion of several directions for future work. The Appendix includes additional estimation results.

2 Econometric Methods

To estimate the asymmetric effects of the Single Market, we follow the data and estimation recommendations for estimating gravity equations from (Larch et al., 2025). Specifically, guided by theory, we estimate alternative specifications of the following econometric model:

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

Here, $X_{ij,t}^{k}$ denotes raw nominal trade flows, measured in current U.S. dollars, from exporter i to importer j in industry k at time t. Due to the separability of the theoretical gravity model (Anderson and van Wincoop, 2004; Costinot et al., 2012), equation (1) can be estimated at any level of aggregation. This would enable us to obtain separate estimates for each of the 170 industries in our data.[4] $X_{ij,t}^{k}$ is in levels because we will obtain our estimates with the Poisson Pseudo Maximum Likelihood (PPML) estimator.[5] Following the recommendations of Egger et al. (2022), we will use data for all available years, instead of data on intervals (Cheng and Wall, 2005). Finally, $X_{ij,t}^{k}$ includes both cross-border/international and domestic/internal trade flows (Yotov, 2022). The use of domestic trade flows would enable us to capture possible diversion from domestic toward international sales, which has been shown to lead to

[4] We offer further details on the trade data in Section 3.

[5] Due to its multiplicative form, the PPML estimator would enable us to take advantage of the information contained in the zeros in our sample. More importantly, PPML successfully handles heteroskedasticity in trade flows data, which renders the OLS gravity estimates inconsistent (Santos Silva and Tenreyro, 2006).

improved estimates of the effects of regional trade agreements (Dai et al., 2014), and which may be particularly important in the case of the Single Market.

Turning to the covariates in our model, the most important term on equation (1) is $EU_{ij,t}$. We use vector notation to denote this term because we will experiment with several EU variables. In the simplest scenario, and consistent with most of the existing literature, $EU_{ij,t}$ will be defined as a single dummy variable that takes a value of one if two countries in our sample are members of the European Union at the same time. This specification will deliver common (across countries) estimates of the impact of the Single Market for each of the 170 industries in our sample. Against this benchmark, our main specification will allow for heterogeneity across EU members and also depending on the direction of trade flows, i.e., on the exports vs. the imports, for each country and industry in our sample (e.g., EU effects on Germany's exports to the rest of the EU vs. Germany's imports from the rest of the EU). Thus, subject to data availability, we can obtain up to 9520 ($170 \times 28 \times 2$) estimates of the effects of the Single Market.[6]

The vector $POLICY^k_{ij,t}$ in equation (1) includes a series of time-varying bilateral policy variables such as membership in Regional Trade Agreements (RTAs) *other than the EU*, membership in the World Trade Organization (WTO), membership in the OECD, complete trade sanctions ($COMPL\_SANCT$), partial trade sanctions ($PARTL\_SANCT$), other sanctions ($OTHER\_SANCT$), membership in the Euro Zone (EURO), and membership in other currency unions ($COMM\_CURR$). The explicit account for membership in the Euro Zone means that our EU estimates will not be inflated by possible additional impact on trade from membership in the Euro Zone.

The rest of the covariates in equation (1) are four sets of fixed effects. Specifically, $GLOB^k_{ij,t}$ is a vector of time-varying border indicators, which take a value of one for international flows and are equal to zero for domestic trade flows for each year in our sample. The estimates on these dummy variables, which are allowed to vary at the industry/sector level,

[6]Since our data ends in 2019, we treat the UK as part of the EU.

would capture the impact of common (de-)globalization trends that have affected the international relative to the domestic trade at alternative levels of aggregation. As demonstrated by Bergstrand et al. (2015) not accounting for such globalization effects leads to an upward bias in the estimates of the effects of RTAs, which may also impact our EU estimates.

$\overrightarrow{\mu}_{ij}^{k}$ is a vector of directional/asymmetric country-pair fixed effects. As demonstrated by Baier and Bergstrand (2007), and consistent with the average treatment effects methods of Wooldridge (2010), the country-pair fixed effects mitigate potential endogeneity concerns. Moreover, the country-pair fixed effects would absorb and control for all time-invariant bilateral trade costs, which leads to a very good match between the estimated and calibrated bilateral trade costs in the gravity model.[7] Finally, we follow the recommendations of (Baier et al., 2019) to use directional (as opposed to symmetric) country-pair fixed effects. Hence, the '$\rightarrow$' notation. This is very important for our purposes because otherwise our directional EU estimates may capture asymmetries that should not be attributed to the Single Market.

Equation (1) also includes source-industry-time and destination-industry-time fixed effects ($\pi_{i,t}^{k}$ and $\chi_{j,t}^{k}$, respectively), which are standardly used in the gravity literature to account for structural multilateral resistances terms (Anderson and van Wincoop, 2003) and for any country-time specific determinants of trade flows on the source and the destination side. Finally, following the prevailing approach in the gravity literature, we cluster the standard errors by country pair Egger and Tarlea (2015), Pfaffermayr (2019), and Pfaffermayr (2022).

3 Data and Sources

To perform the empirical analysis, we rely on the following trade and policy data.

[7] Egger and 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). Therefore, the use of country-pair fixed effects is highly recommended (Larch et al., 2025).

3.1. Trade data. The trade data 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. (2020) and, for the current analysis, we use the second edition of the data (Borchert et al., 2022).[8] The ITPD-E has several advantages for our purposes. First, and most important for our purposes, the ITPD-E is constructed from raw data without reliance on any statistical modeling.[9] Thus, the ITPD-E data is appropriate for our estimation purposes. Second, the ITPD-E has wide coverage across several dimensions. Specifically, it includes a large number of countries (more than 200), a large number of industries (170) that cover the whole economy (e.g., including Agriculture, Mining and Energy, Manufacturing, and Services), and a long period of time (1986-2019), which varies by industry depending on the raw data used. Finally, the ITPD-E includes domestic trade flows. As demonstrated by Dai et al. (2014) this is important for estimating the impact of RTAs because the use of domestic trade data would enable us to explicitly allow for and capture any trade diversion effects from domestic sales due to the EU.

3.2. Policy Gravity Variables. The data on the bilateral policy variables in our econometric model come from several sources. The data on membership in the European Union (EU) and membership in the World Trade Organization (WTO) come from the *Dynamic Gravity Dataset* (DGD) of the USITC (Gurevich and Herman, 2018).[10] The indicator variable for countries that use the Euro is from Fontagné and Yotov (2024), and it is based on data from the European Union.[11] The data on other currency unions were constructed by

[8] https://www.usitc.gov/data/gravity/itpde.htm

[9] The ITPD-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. (2020) and (Borchert et al., 2022) for further details on the construction and features of the ITPD-E.

[10] https://www.usitc.gov/data/gravity/dgd.htm

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

Jose de Sousa.[12] We also construct our own indicator for OECD memberhsip. The data on membership in Regional Trade Agreements (RTAs) are from Egger and Larch (2008) and comprise information on enforced RTAs until year 2021.[13] Finally, the data on sanctions are from the latest edition of the *Global Sanctions Database* (Felbermayr et al., 2020; Syropoulos et al., 2024).[14]

4 Estimation Results and Analysis

This section presents two sets of EU estimates. For comparison and benchmarking, in Subsection 4.1., we report and briefly discuss estimates of the average (across member states) EU effects for each industry in our sample. These estimates are similar to the ones in Fontagné and Yotov (2024). Then, in Subsection 4.2., we introduce and analyze our novel asymmetric estimates of the effects of the Single Market, which vary across countries and industries as well.

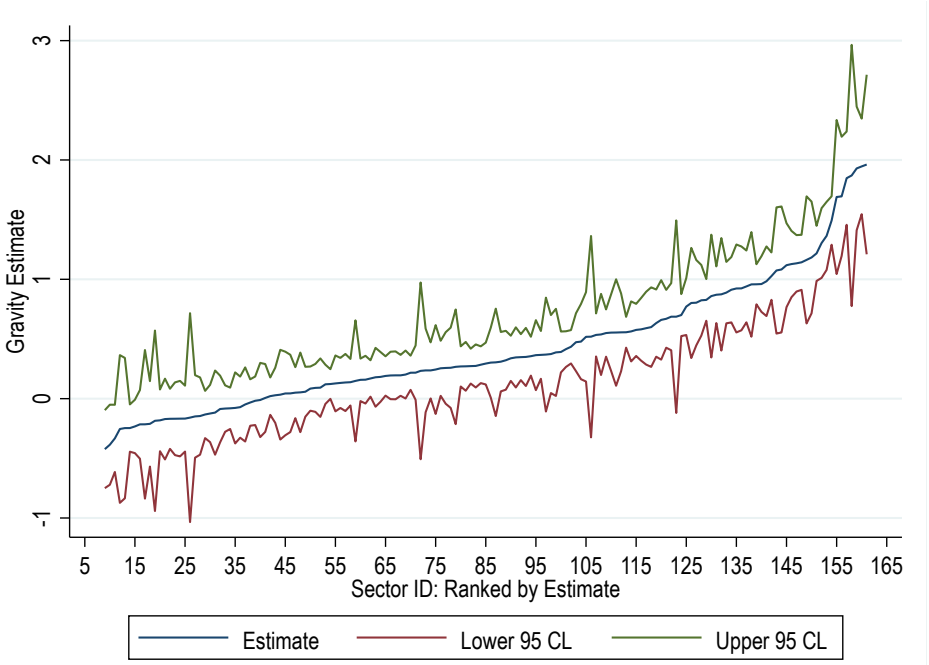
4.1. Common EU Effects. Since we obtain estimates for each industry in our sample (i.e., a total of 170 industries), we rely on one figure that includes all estimates. For expositional clarity, we drop the top and bottom 5% of EU estimates.[15] The estimates in each figure are ordered based on their magnitude.

Several findings stand out from Figure 1. First, the EU has been extremely successful in promoting trade among Member States.[16] This claim is supported by the fact that the vast majority of the estimates in Figure 1 (i.e., about 80%) are positive, and most of them are sizable and statistically significant. These findings are consistent with existing literature that has documented the benefits of the EU for trade (e.g.,Fontagné et al. (1998), Mayer et

[12]http://jdesousa.univ.free.fr/data.htm
[13]https://www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html
[14]https://www.globalsanctionsdatabase.com/
[15]A long table with all estimates is included in the Appendix.
[16]We remind the reader that our EU estimates do not include the effects of the Euro zone. Thus, for the countries that have adopted the Euro, the impact of European integration on international trade should be even larger. See Berthou and Fontagné (2013) for a more refined analysis on the impact of the Euro.

al. (2019)).[17] Second, our estimates imply that the EU has led to about 63 percent increase in members' trade on average.[18] Third, using a standard value for the trade elasticity of 5,[19] our average across all and average across the positive estimates suggest that EU membership has led to direct trade volume gains that are equivalent to tariff reductions of 11%.[20]

Figure 1: Common EU Effects on Trade: All Industries



Note: This figure reports industry-level estimates, and the corresponding confidence intervals, of the impact of the EU on international trade. The estimates are obtained from specification (1) after constraining the impact of the EU to be common across all member states. See text for further details.

4.2. Asymmetric EU Effects. We now report the results of our new approach estimating asymmetric EU effects. Due to their large number (i.e., we obtain a total of 9,390 EU estimates), we report our asymmetric estimates exclusively in figures. Figure 2 visualizes all (across all industries and all countries) asymmetric EU estimates that we obtain, and

[17] Our common EU estimates that we obtain are very similar to the corresponding indexes from Fontagné and Yotov (2024), and the small differences are due to the improved set of bilateral policy covariates, where we now also control for OECD membership.

[18] Calculated as $(\exp(0.49) - 1) * 100$, where 0.49 is the mean of the EU estimates from Figure 1.

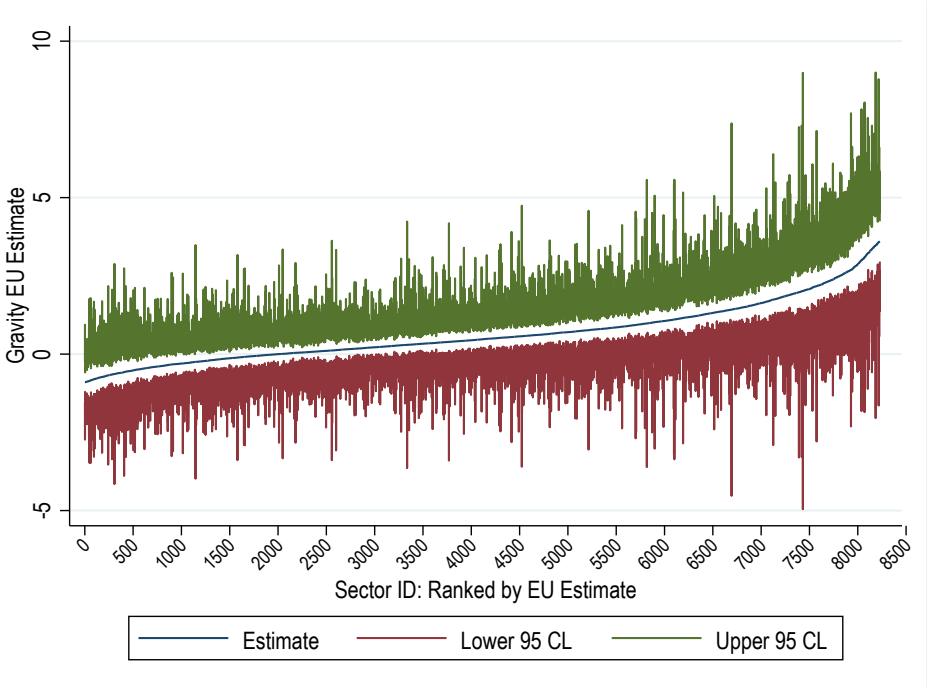
[19] The trade elasticity value that we employ corresponds to a value of 6 for the elasticity of substitution, in line with the average elasticity estimates computed at the product level. See Fontagné et al. (2022).

[20] Calculated as $(\exp(0.49/(1-\sigma)) - 1) * 100$, where $\sigma = 5$.

the results across the four broad sectors in our sample appear in Figure 3. While we obtain directional estimates for every country and every industry, for expositional clarity, in each figure, we have dropped the top and bottom 5% of the estimates. In addition, we have dropped 246 estimates (2.6%), whose confidence intervals are very wide. The estimates in each figure are ordered in terms of their magnitude.

We draw the following conclusions based on Figures 2. First, consistent with the common EU estimates from the previous subsection and with the results from the existing literature, our estimates imply that the EU has been extremely successful in promoting trade among Member States. The majority of the EU estimates (about three-quarters) in Figure 2 are positive and most of them are sizable and statistically significant. Second, the estimates in

Figure 2: Asymmetric EU Effects on Trade: All Industries



Note: This figure reports country-industry estimates, and the corresponding confidence intervals, of the impact of the EU on international trade. The estimates are obtained from specification (1), and the impact of the EU is allowed to be heterogeneous for each country and depending on the direction of trade flows, i.e., on exports vs. imports. See text for further details.

Figure 2 suggest that, on average, the EU has led to about a 92 percent increase in members' trade, calculated as $(\exp(0.65) - 1) * 100$, where 0.65 is the mean of the EU estimates from

Figure 2, i.e., the EU has doubled trade among its members. Importantly, the average EU estimate that we obtain based on the asymmetric analysis is significantly larger than the corresponding common estimate from Fontagné and Yotov (2024) and re-estimated in the previous sub-section. This result reinforces the importance of allowing for asymmetric EU effects and may have implications for the welfare impact of the EU. Third, using a standard value for the trade elasticity of 5,[21] our estimates suggest that EU membership has led to direct trade volume gains that are equivalent to tariff reductions of about 12%, respectively, calculated as $(\exp(0.65/(1-\sigma))-1)*100$, where $\sigma = 5$.

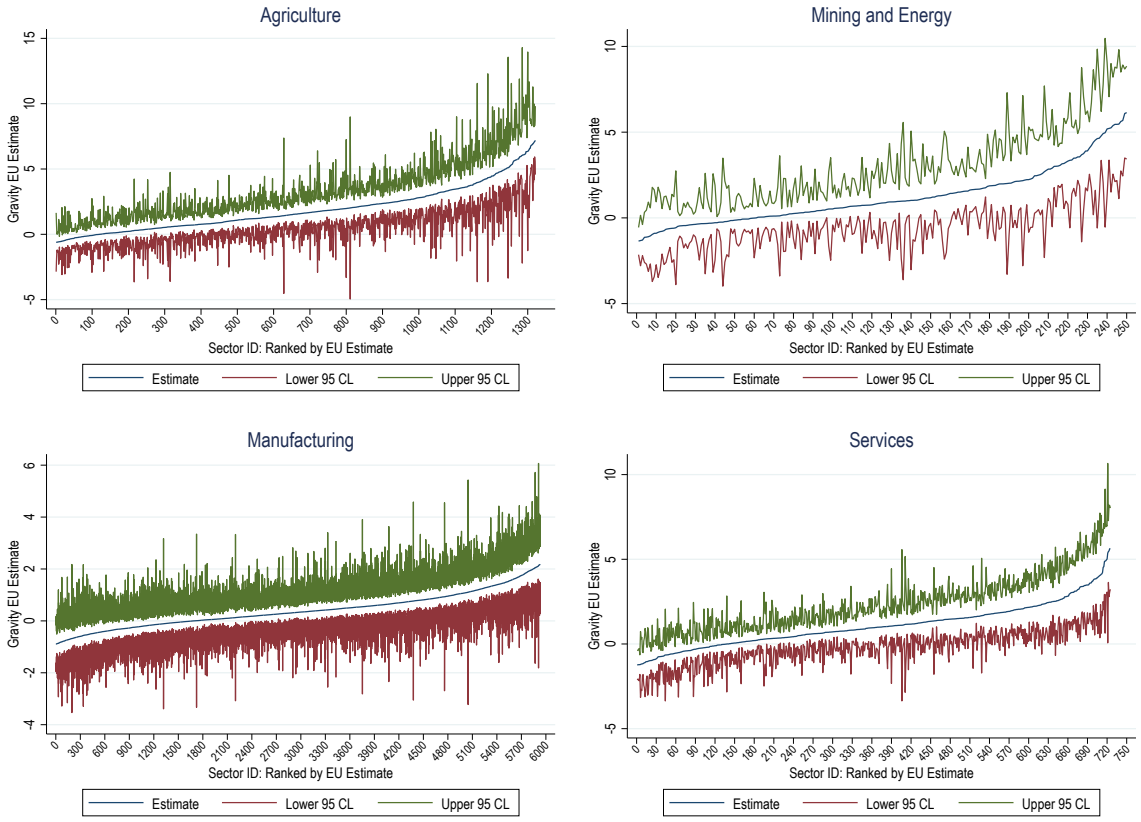
Finally, as captured by Figure 3, we find that the effects of the EU have been very heterogeneous across the industries and the broad sectors in our sample. Specifically, the estimates in Figure 3 range between -0.90 and 3.60. More specifically, based on the average estimates for each panel of Figure 3, we find that the EU has led to a 550% increase in the trade volume in Agriculture, 238% in Mining and Energy, 48% in Manufacturing, and 194% in Services.

While the estimates in figures 2 and 3 are somewhat informative about the magnitudes and heterogeneity of the asymmetric EU effects, they do not allow us to draw any conclusions about the asymmetries in these estimates, which is the main object of interest to us. Therefore, in Figure 4, we plot the effects of the EU on the exports vs. imports for each country-industry combination. The estimates in each panel of Figure 4 are identical, and we have just used different colors and shapes in an effort to detect some systematic patterns across the key dimensions of our data.

We draw the following conclusions based on Figure 4. The first and most important result, which is very clear from each of the four panels in the figure, is that the effects of the EU have been very asymmetric depending on the direction of trade flows across the members of the Single Market. While interpreting these results, we want to emphasize that our specification controls for all country-specific characteristics, including comparative

[21]The trade elasticity value that we employ corresponds to a value of 6 for the elasticity of substitution, in line with the average elasticity estimates computed at the product level. See Fontagné et al. (2022).

Figure 3: Asymmetric EU Effects on Trade: Broad Sectors

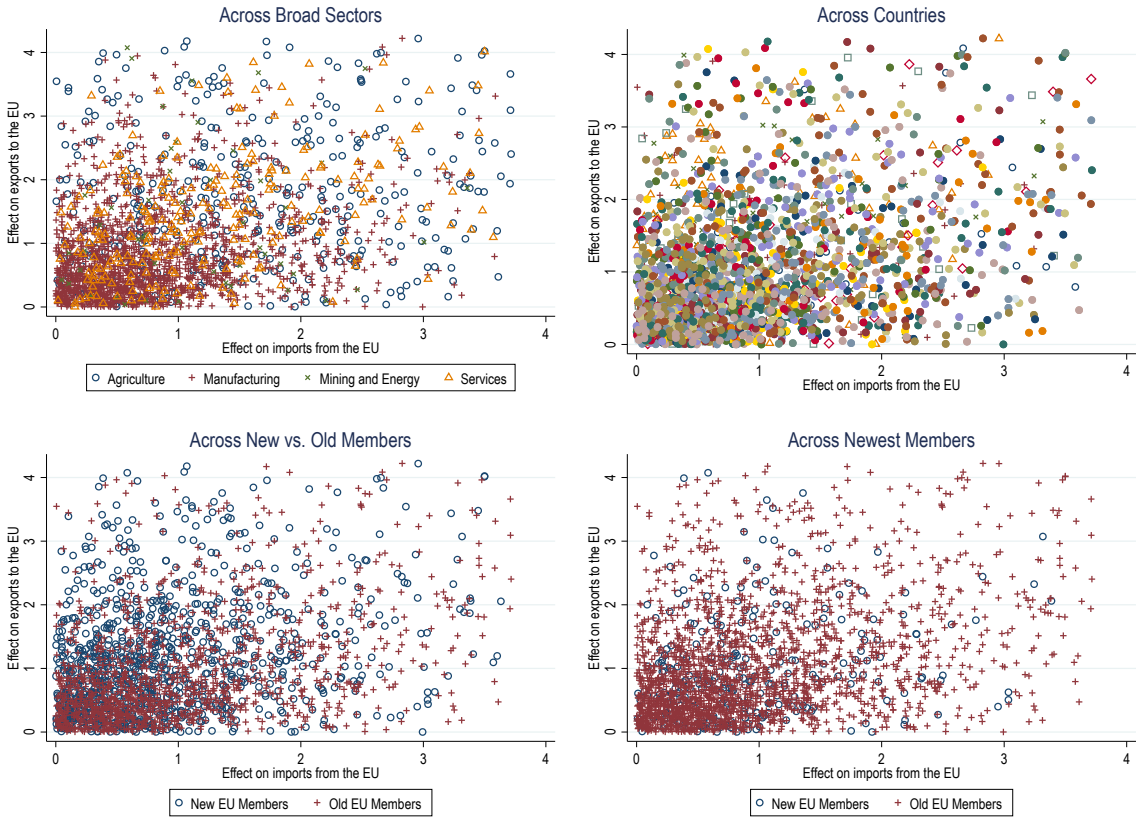


Note: This figure reports country-industry estimates, and the corresponding confidence intervals, of the impact of the EU on international trade. The estimates are obtained from specification (1), and the impact of the EU is allowed to be hererogeneous for each country and depending on the direction of trade flows, i.e., on exports vs. imports. The estimates are the same as those from Figure 2, however, they are grouped across the broad sectors (i.e., Agriculture, Mining & Energy, Manufacturing, and Services) in our data. See text for further details.

advantage, on the exporter side and on the importer side with exporter-time and importer-time fixed effects for each industry. This result has potentially important implications for the welfare effects and distributional effects of the EU, e.g., in terms of net effect and because a very asymmetric impact in favor of imports will benefit the consumers, but not so much the producers in a given country. The asymmetries that we obtain may also point to specific industries for policy intervention.

The top-left panel Figure 4 distinguishes between the asymmetric effects across the four broad sectors in our sample. Two main findings stand out from this figure. First, consistent with our previous discussion, we see that the effects of the EU are larger for Agriculture

Figure 4: The Asymmetric Effects of the Single Market



Note: This figure reports country-industry estimates, which are estimates are obtained from specification (1). The EU effects are allowed to be heterogeneous depending on the direction of trade flows, i.e., for each country and industry, the figure reports the EU effects on exports vs. imports. The estimates in each panel of the figure are identical, and we have just used different colors and shapes in an effort to identify some systematic patterns across the key dimensions of our data. Specifically, the top-left panel differentiates across the four broad sectors. The top-right panel distinguishes across countries. The bottom-left panel differentiates between old vs. new members. Finally, the bottom-right panel zooms in on the newest members. See text for further details.

and Services, and they are smaller for Manufacturing. Second, and more important for the current purposes, we see that the asymmetries in the EU effects are pronounced in each of the four broad sectors in our sample.

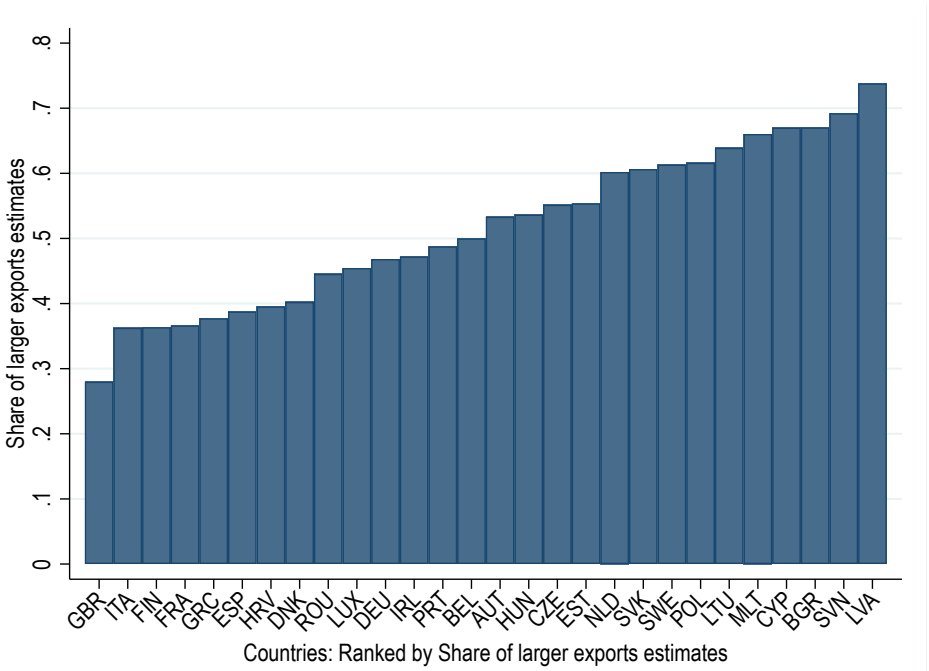
In the next three panels of Figure 4 we attempt to identify some patterns in the asymmetric estimates across countries. This is indeed a difficult task given the multidimensional object to look at. However, some general patterns can be identified. Each color in the top-right panel of Figure 4 represents a specific EU member. The main conclusion from this panel is that the effects are asymmetric for each country. The bottom-left panel distinguishes

between 'old' vs. 'new' members, where the latter are the countries that joined in 2004 and later. We cannot identify specific patterns from this panel. Similarly, in the bottom-right panel in Figure 4, we cannot identify significant differences in the asymmetries between the 'newest' members (i.e., Bulgaria, Croatia, and Romania) and everyone else.

In an attempt to address the interpretation challenges from Figure 4, and to tentatively shed light on the determinants of the occurrence of asymmetries, in Figure 5 we plot for each country the share of estimates for which the estimate on this country's exports to the EU is larger than the corresponding estimate on the same country's imports from the EU. Thus, for example, the 0.28 estimate for the United Kingdom implies that in 28% of the 170 industries the estimate of the EU effects on British exports to the EU was larger than the corresponding estimate on British imports from the EU. More generally, With a small number of exceptions (e.g., Romania, Croatia, and the Netherlands we observe a systematic pattern where the majority of estimates are larger for imports (exports) in old (new) Member States.

A straightforward implication of the rather systematic pattern illustrated by Figure 5 is that EU membership has had different impacts on the production structure and the sectoral value added in the richer/older members and the poorer/newer joiners. Acceding countries had comparative advantages complementary to older members, which have been reinforced by flows of Foreign Direct Investment aiming to take benefit of these differences. Firms in old Member States would have eventually reinforced their competitive positions on third markets by relocating part of their value chain in acceding countries. Another interpretation is that cheaper imports from the new member states benefited consumers in the old member states the most, while producers in the new member states took advantage of the vast markets of the EU's founders to expand their production and/or redirect their exports.

Figure 5: Share of larger estimates for exports to EU



Note: This figure plots the shares of estimates for which the estimate on this country's exports to the EU is larger than the corresponding estimate on the same country's imports from the EU for each country. See text for further details.

5 Conclusion

We estimated asymmetric estimates of the effects of the Single European Market on trade among its members using recent disaggregated data. Our main findings are that the EU effects on members' trade were very asymmetric and that the trade cost incidence of these asymmetries has fallen disproportionately on the producers in old members and the consumers in new joiners. Usual methods silencing these asymmetries actually underestimate the benefits of the completion of the Single European Market.

Our methods and findings motivate three extensions, which we deem meaningful. First, we have created a rich database of asymmetric effects that may be used in a second-stage analysis in order to identify the determinants of the asymmetries that we obtain. We believe that this is an important direction for further work because such an analysis could inform concrete policies both at the level of individual members as well as policies at the EU level.

Second, while in this project we have pushed the current bounds in terms of computational intensity, obtaining even more disaggregated estimates, e.g., directional EU effects per pair and industry, would generate even more data and valuable insights. Finally, we believe that it may be informative to translate our partial estimates into general equilibrium effects in order to assess the full impact of such asymmetries on trade and welfare for the EU and in the rest of the world.

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Appendix

Table 1: Industry-Level EU Estimates

ID	Industry Description	Broad Sector	Estim.	Std.Err.
1	Wheat	Agriculture	2.092	(.209)
2	Rice (raw)	Agriculture	3.176	(.277)
3	Corn	Agriculture	2.033	(.234)
4	Other cereals	Agriculture	1.848	(.199)
5	Cereal products	Agriculture	3.467	(.492)
6	Soybeans	Agriculture	1.962	(.384)
7	Other oilseeds (excluding peanuts)	Agriculture	0.824	(.151)
8	Animal feed ingredients and pet foods	Agriculture	0.600	(.17)
9	Raw and refined sugar and sugar crops	Agriculture	3.323	(.891)
10	Other sweeteners	Agriculture	1.163	(.272)
11	Pulses and legumes, dried, preserved	Agriculture	0.369	(.243)
12	Fresh fruit	Agriculture	1.128	(.142)
13	Fresh vegetables	Agriculture	1.217	(.118)
14	Prepared fruits and fruit juices	Agriculture	0.874	(.24)
15	Prepared vegetables	Agriculture	5.642	(2.096)
16	Nuts	Agriculture	1.118	(.179)
17	Live Cattle	Agriculture	0.687	(.412)
18	Live Swine	Agriculture	4.592	(.463)
19	Eggs	Agriculture	1.946	(.204)
20	Other meats, livestock products, and live animals	Agriculture	-0.117	(.18)
21	Cocoa and cocoa products	Agriculture	3.275	(.505)
22	Beverages, nec	Agriculture	2.625	(.3)
23	Cotton	Agriculture	1.690	(.329)
24	Tobacco leaves and cigarettes	Agriculture	0.802	(.235)
25	Spices	Agriculture	0.924	(.179)
26	Other agricultural products, nec	Agriculture	0.350	(.124)
27	Forestry	Agriculture	-0.167	(.161)
28	Fishing	Agriculture	-0.215	(.318)
29	Mining of hard coal	Mining and Energy	0.520	(.43)
30	Mining of lignite	Mining and Energy	1.870	(.558)
31	Extraction crude petroleum and natural gas	Mining and Energy	-0.254	(.316)
32	Mining of iron ores	Mining and Energy	0.233	(.378)
33	Other mining and quarring	Mining and Energy	0.518	(.191)
34	Electricity production, collection, and distribution	Mining and Energy	1.074	(.27)
35	Gas production and distribution	Mining and Energy	-2.137	(1.284)
36	Processing/preserving of meat	Manufacturing	1.142	(.118)
37	Processing/preserving of fish	Manufacturing	0.960	(.119)
38	Processing/preserving of fruit and vegetables	Manufacturing	0.700	(.09)
39	Vegetable and animal oils and fats	Manufacturing	0.923	(.188)
40	Dairy products	Manufacturing	1.493	(.104)
41	Grain mill products	Manufacturing	1.364	(.146)
42	Starches and starch products	Manufacturing	1.134	(.121)
43	Prepared animal feeds	Manufacturing	0.871	(.121)
44	Bakery products	Manufacturing	0.889	(.131)
45	Sugar	Manufacturing	1.183	(.239)
46	Cocoa chocolate and sugar confectionery	Manufacturing	1.027	(.101)
47	Macaroni noodles and similar products	Manufacturing	1.695	(.255)
48	Other food products n.e.c.	Manufacturing	0.959	(.086)
49	Distilling rectifying and blending of spirits	Manufacturing	1.304	(.149)
50	Wines	Manufacturing	0.804	(.182)
51	Malt liquors and malt	Manufacturing	0.478	(.161)
52	Soft drinks; mineral waters	Manufacturing	0.581	(.134)
53	Tobacco products	Manufacturing	1.929	(.264)
54	Textile fibre preparation; textile weaving	Manufacturing	0.576	(.111)
55	Made-up textile articles except apparel	Manufacturing	0.0580	(.107)
56	Carpets and rugs	Manufacturing	0.913	(.14)
57	Cordage rope twine and netting	Manufacturing	0.218	(.116)
58	Other textiles n.e.c.	Manufacturing	0.195	(.101)
59	Knitted and crocheted fabrics and articles	Manufacturing	-0.169	(.128)
60	Wearing apparel except fur apparel	Manufacturing	-0.481	(.146)

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61	Dressing and dyeing of fur; processing of fur	Manufacturing	0.0530	(.17)
62	Tanning and dressing of leather	Manufacturing	-0.171	(.173)
63	Luggage handbags etc.; saddlery and harness	Manufacturing	-0.386	(.171)
64	Footwear	Manufacturing	-0.168	(.155)
65	Sawmilling and planing of wood	Manufacturing	-0.146	(.165)
66	Veneer sheets plywood particle board etc.	Manufacturing	0.182	(.106)
67	Builders' carpentry and joinery	Manufacturing	0.128	(.119)
68	Wooden containers	Manufacturing	-0.233	(.114)
69	Other wood products; articles of cork/straw	Manufacturing	0.310	(.127)
70	Pulp paper and paperboard	Manufacturing	0.202	(.102)
71	Corrugated paper and paperboard	Manufacturing	0.274	(.092)
72	Other articles of paper and paperboard	Manufacturing	-0.0180	(.104)
73	Publishing of books and other publications	Manufacturing	0.190	(.084)
74	Publishing of newspapers journals etc.	Manufacturing	-0.0870	(.142)
75	Publishing of recorded media	Manufacturing	-0.211	(.183)
76	Other publishing	Manufacturing	-0.0780	(.152)
77	Printing	Manufacturing	0.195	(.102)
78	Service activities related to printing	Manufacturing	0.0330	(.192)
79	Coke oven products	Manufacturing	-0.185	(.386)
80	Refined petroleum products	Manufacturing	0.237	(.12)
81	Processing of nuclear fuel	Manufacturing	-0.159	(.447)
82	Basic chemicals except fertilizers	Manufacturing	0.120	(.084)
83	Fertilizers and nitrogen compounds	Manufacturing	0.669	(.124)
84	Plastics in primary forms; synthetic rubber	Manufacturing	0.415	(.076)
85	Pesticides and other agro-chemical products	Manufacturing	0.772	(.122)
86	Paints varnishes printing ink and mastics	Manufacturing	0.196	(.087)
87	Pharmaceuticals medicinal chemicals etc.	Manufacturing	0.367	(.102)
88	Soap cleaning and cosmetic preparations	Manufacturing	0.827	(.089)
89	Other chemical products n.e.c.	Manufacturing	0.391	(.087)
90	Man-made fibres	Manufacturing	0.660	(.17)
91	Rubber tyres and tubes	Manufacturing	0.550	(.101)
92	Other rubber products	Manufacturing	0.169	(.078)
93	Plastic products	Manufacturing	0.273	(.075)
94	Glass and glass products	Manufacturing	0.284	(.078)
95	Pottery china and earthenware	Manufacturing	0.136	(.122)
96	Refractory ceramic products	Manufacturing	0.179	(.126)
97	Struct.non-refractory clay; ceramic products	Manufacturing	0.132	(.107)
98	Cement lime and plaster	Manufacturing	-0.149	(.176)
99	Articles of concrete cement and plaster	Manufacturing	0.0500	(.109)
100	Cutting shaping and finishing of stone	Manufacturing	-0.0480	(.158)
101	Other non-metallic mineral products n.e.c.	Manufacturing	0.356	(.083)
102	Basic iron and steel	Manufacturing	0.557	(.066)
103	Basic precious and non-ferrous metals	Manufacturing	0.553	(.163)
104	Structural metal products	Manufacturing	0.0210	(.08)
105	Tanks reservoirs and containers of metal	Manufacturing	-0.0830	(.099)
106	Steam generators	Manufacturing	0.0430	(.179)
107	Cutlery hand tools and general hardware	Manufacturing	0.271	(.104)
108	Other fabricated metal products n.e.c.	Manufacturing	0.348	(.098)
109	Engines and turbines (not for transport equipment)	Manufacturing	-0.0110	(.159)
110	Pumps compressors taps and valves	Manufacturing	-0.0810	(.088)
111	Bearings gears gearing and driving elements	Manufacturing	0.159	(.102)
112	Ovens furnaces and furnace burners	Manufacturing	0.0290	(.118)
113	Lifting and handling equipment	Manufacturing	0.158	(.091)
114	Other general purpose machinery	Manufacturing	0.123	(.063)
115	Agricultural and forestry machinery	Manufacturing	0.534	(.092)
116	Machine tools	Manufacturing	0.346	(.129)
117	Machinery for metallurgy	Manufacturing	0.538	(.173)
118	Machinery for mining and construction	Manufacturing	0.338	(.097)
119	Food/beverage/tobacco processing machinery	Manufacturing	0.270	(.086)
120	Machinery for textile apparel and leather	Manufacturing	0.00600	(.145)
121	Weapons and ammunition	Manufacturing	0.259	(.172)
122	Other special purpose machinery	Manufacturing	-0.0320	(.099)
123	Domestic appliances n.e.c.	Manufacturing	0.255	(.118)
124	Office accounting and computing machinery	Manufacturing	0.302	(.149)
125	Electric motors generators and transformers	Manufacturing	-0.133	(.101)
126	Electricity distribution and control apparatus	Manufacturing	0.138	(.1)
127	Insulated wire and cable	Manufacturing	0.322	(.126)

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128	Accumulators primary cells and batteries	Manufacturing	0.556	(.166)
129	Lighting equipment and electric lamps	Manufacturing	-0.167	(.141)
130	Other electrical equipment n.e.c.	Manufacturing	-0.246	(.101)
131	Electronic valves tubes etc.	Manufacturing	0.365	(.15)
132	TV/radio transmitters; line comm. apparatus	Manufacturing	-0.215	(.147)
133	TV and radio receivers and associated goods	Manufacturing	-0.0710	(.131)
134	Medical surgical and orthopaedic equipment	Manufacturing	0.0840	(.094)
135	Measuring/testing/navigating appliances etc.	Manufacturing	0.217	(.073)
136	Optical instruments and photographic equipment	Manufacturing	0.0440	(.165)
137	Watches and clocks	Manufacturing	0.257	(.153)
138	Motor vehicles	Manufacturing	0.473	(.124)
139	Automobile bodies trailers and semi-trailers	Manufacturing	0.244	(.19)
140	Parts/accessories for automobiles	Manufacturing	0.563	(.128)
141	Building and repairing of ships	Manufacturing	-0.492	(.164)
142	Building/repairing of pleasure/sport. boats	Manufacturing	-0.423	(.167)
143	Railway/tramway locomotives and rolling stock	Manufacturing	0.374	(.167)
144	Aircraft and spacecraft	Manufacturing	0.237	(.179)
145	Motorcycles	Manufacturing	0.591	(.156)
146	Bicycles and invalid carriages	Manufacturing	-0.333	(.144)
147	Other transport equipment n.e.c.	Manufacturing	-0.124	(.122)
148	Furniture	Manufacturing	0.294	(.089)
149	Jewellery and related articles	Manufacturing	0.388	(.186)
150	Musical instruments	Manufacturing	-0.182	(.132)
151	Sports goods	Manufacturing	0.0920	(.125)
152	Games and toys	Manufacturing	-0.247	(.3)
153	Other manufacturing n.e.c.	Manufacturing	0.0900	(.102)
154	Manufacturing services on physical inputs	Services	-2.060	(1.281)
155	Maintenance and repair services n.i.e.	Services	-0.754	(.508)
156	Transport	Services	0.435	(.071)
157	Travel	Services	0.984	(.149)
158	Construction	Services	0.267	(.245)
159	Insurance and pension services	Services	0.860	(.262)
160	Financial services	Services	0.940	(.153)
161	Charges for use of intellectual property	Services	0.149	(.259)
162	Telecom, computer, information services	Services	0.633	(.144)
163	Other business services	Services	0.687	(.143)
164	Heritage and recreational services	Services	-2.139	(.861)
165	Health services	Services	0.304	(.229)
166	Education services	Services	0.958	(.224)
167	Government goods and services n.i.e.	Services	0.554	(.227)
168	Services not allocated	Services	-0.899	(.21)
169	Trade-related services	Services	1.083	(.269)
170	Other personal services	Services	-2.185	(.582)

Notes: This table reports estimates of the impact of the EU on international trade, which are obtained from specification (1). 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 EU estimates together with their corresponding standard errors, respectively. See text for further details.