

Exploring the Drivers and Constraints in Intra-EU Trade

Elena Makrevska Disoska¹ ^(b) Irena Kikerkova² ^(b) Katerina Toshevska – Trpchevska³ ^(b) Jasna Tonovska⁴ ^(b) Received: April 13, 2023 Accepted: July 11, 2023 Published: October 30, 2023

Keywords: Intra-EU trade; Gravity model; Measure of Aggregate Trade Restrictions

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-Non-Commercial 4.0 License (https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission. **Abstract:** The objective of this paper is to explore the factors that stimulate trade among EU countries and pinpoint areas that require improvement to foster a further increase in trade intensity within the region. The focus is on the effect of aggregate trade restrictions, which are based on the novel indicator Measure of Aggregate Trade Restrictions (MATR), developed by the IMF. The empirical analysis consists of the estimation of a gravity panel model for the 28 EU member countries (including Great Britain) for the period from 1999-2020, by implementing both Ordinary least squares (OLS) and Poisson Pseudo Maximum Likelihood (PPML) estimators. The results show that the Eurozone membership has positive effects on increasing intra-EU trade, whereas the MATR indicator has significant negative effects, suggesting that the elimination of the remaining trade restrictions could lead to a further boost of intra-EU trade.

1. INTRODUCTION

The European Union is one of the most popular research topics for economists and researchers throughout the world. In only half a century since the beginning of the integrative process, the EU has achieved remarkable economic development which put its member-states in a privileged position within the world economy. At the turn of the 21st century and by the end of its first decade, inhabited with only 6% of the world population, the EU became the biggest world trader creating about 20% of the total world trade. The EU exchanged about 1/5 of the total world exchange of goods; was the dominant trader in services responsible for 23.9% of the total world trade in services; and at the same time became the biggest source of FDI outflow, being the second biggest importer of FDI in the world exchange of goods, where the EU has become the second biggest exporter and importer of goods in the world economy (Eurostat, 2022).

The effects of the regional integration process became especially visible after the biggest enlargement of the EU in 2004-2007 which significantly boosted its total trade flows in goods. This especially applied to the new member-states, as the integrative process involved them not only in significantly more intense trade in goods on the Internal Market but also in global trade flows in goods, as well. Ten out of thirteen new member-states experienced an increase in total trade exchange of goods of more than 200%, with Latvia holding the absolute record of 631%. However, the enlargement was not in favor of only the newcomers. Seven of the older member-states of the EU, Germany being one of them, experienced an increase of total trade exchange in goods between 100-200%, while seven other member-states, among which only Malta is a newcomer, experienced growth of less than 100% (Eurostat, 2022).

⁴ Faculty of Economics – Skopje, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia



Faculty of Economics – Skopje, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia

² Faculty of Economics – Skopje, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia

³ Faculty of Economics – Skopje, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia

To understand the real economic and trade capacity of the EU it is important to point out that intra-EU trade deserves special attention as during the last two decades it has outpaced the extra-EU trade exchange in goods reaching 1.5 times bigger value than the latter at the end of 2022. Also, it is valuable to note that the structure of the intra-EU trade in goods is predominantly intra-industrial (Eurostat, 2022).

The big success of the integrative process within the EU inspired researchers to provide valid analyses of and insight into the combination of factors that have led to remarkable economic results. Most of their efforts were oriented towards revealing the effects of elimination of the existing tariff and non-tariff barriers in the process of the accomplishment of the Internal Market, considering the introduction of the euro as a common currency, the creation of the Schengen Area and providing free movement of labor, simultaneously changing the core business environment through the deepening of the regional integration and additional accepting of new member-states. Most of the research papers provide analyses based on the construction of gravity models inspired by the Newtonian gravity theory which evaluates the gravitation force among different objects by taking into consideration their mass and the distance between them. Translated in economic terms and theory, gravity models provide insight into the propensity to trade regarding the economic capacity of two trading partners measured by their GDP and the geographic distance between them, keeping in mind that transportation costs have a huge impact on the price competitiveness of products placed on geographically remote markets. To improve the results of their gravity models, researchers use additional variables besides the two mentioned which reflect barriers to trade created by the existence of common borders, usage of different languages, usage of different currencies, etc. The negative impact of still-existing, non-eliminated trade barriers is important to be quantified to provide evidence that would be in favor of further trade liberalization. The economic theory supports the idea that the bigger the existing trade barriers among trading partners are, the bigger the non-trade barriers among them, as well. For measuring the effects of both tariff and non-tariff barriers in 2005 the so-called Trade Restriction Index (TRI) was constructed as a standard metric that should evaluate the effect that a uniform tariff would produce among member states as a trade restriction that would resemble the restrictiveness of the implemented trading policies (Anderson & Neary, 2005). Five years later TRIs were recommended as adequate for general equilibrium analyses (Coughlin, 2010). However, this model relied on too many assumptions which made other researchers resentful of using TRIs, especially as they are not widely available.

Regarding all above mentioned, we decided to construct a gravity model to measure the effects of the Internal Market upon the intra-EU trade by using a new measure – Measure of Aggregate Trade Restrictions (MATR) which is based upon the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) (Estefania-Flores et al., 2022). Besides measuring the usual tariff and non-tariff barriers among member-states, this aggregate measure includes the usage of the common currency and the effects of the eurozone upon payments and the current accounts of all member-states, thus encompassing a total of 18 different barriers still existing on the Internal Market. The model was constructed by using data on MATR for the period from 1999-2020 for 28 member-states (including the United Kingdom). For the same period, used MATR data included Croatia as a member state out of the eurozone. Our basic aim was to provide an evaluation of still existing barriers to trade in intra-EU trade to point out the eventual potential for further trade liberalization on the Internal Market.

The structure of the paper is as follows: a brief introduction followed by a literature review about the effects of the creation and functioning of the Internal Market; an explanation of the

construction of MATR and recent developments in the EU; an explanation of the construction of the model and running four different equations using MATR; analyzes of the results; and finally concluding remarks.

2. LITERATURE REVIEW

In the following segment, we present the findings from more recent research on the various effects of the establishment of the Internal Market on EU economies.

According to the European Commission (2023), the Internal Market is one of the most remarkable accomplishments of the EU. With a consumer base of nearly 450 million people, the Internal Market comprises 18% of the global GDP and accounts for almost one-third of global trade (European Commission, 2023). Gunnella et al. (2021) argue that European integration played a key role in establishing a common framework for consumer and labor protection, as well as creating common product standards and production rules. These measures, along with the introduction of a common currency and a monetary union, have helped to lower trade-related costs and facilitate the integration of European markets. Indeed, using Bayesian model averaging (BMA), Beck (2020) finds that real GDP, trade openness, EU and Euro area membership, corruption, and factor abundance differentials are the primary determinants of intra-industry trade among the EU countries, while transportation costs and cultural similarity do not have an effect. Indeed, Member States engage in more trade within the EU (18% of world trade) than with the rest of the world (13% of world trade) (European Commission, 2023). The movement of capital and goods has seen the most significant progress under the Internal Market, with trade in goods within the EU doubling over the past three decades. This is reflected by the report by The National Board of Trade (2015), which finds that the main channel through which the Internal Market has promoted the economic growth of Europe is the free movement of goods and capital, leading to a rise in intra-EU trade and investment. This development has contributed to higher levels of competition, greater innovation, and a wider range of products. While trade in services and the movement of people have also expanded, these sectors have faced challenges due to their nature and persistent barriers.

The effects of trade integration for EU countries are extensively researched and quantified. The study by Imbruno (2021) estimates that there were annual welfare gains of approximately 2.5% from trade integration during the period of significant EU enlargement (2004-2012). Specifically, trade integration in intermediate input markets is found to primarily improve efficiency within firms, while trade integration in final goods markets leads to the reallocation of businesses toward more productive firms. Using a structural gravity framework, the study by Spornberger (2022) finds that the initial integration degree of the EU-15 members had a significant impact on intra-EU trade shares, increasing them by 70% until 1995. Since then, trade integration has not deepened for the EU-15, but trade shares among the newly joined CEE countries have doubled. The study estimates that further deepening of the Internal Market could potentially result in an additional 50% increase in trade and around a 3% increase in real income.

Many authors point to the heterogeneous impact of trade integration among EU countries. Freeman et al. (2022) find significant benefits provided by the EU and the Internal Market for the trade of goods and services, which are greater for the more recent EU members from CEE and are increasing gradually. This is not only due to the ongoing reduction of trade costs as economic integration deepens but also because the EU's internal market for goods and services continues to expand. The gravity model by Mayer et al. (2019) shows that the Internal Market has promoted deep trade integration beyond just tariff reductions, with a trade impact more than three times greater than a regular RTA. The results show that the Internal Market has boosted goods trade by 109%, tradable services trade by 58%, and welfare by 4.4%, on average. More-over, small open economies, and particularly Eastern European countries, have benefited more than large EU members. Also, specialization patterns of intra-EU exports among EU Member States are observed. Stehrer et al. (2016) find that EU integration has led to a higher intensity of bilateral exports in both goods and services, resulting in a concentration and clustering of exports in some EU countries. Moreover, the trade-to-GDP elasticities for EU-28 exports have become notably smaller when considering the exporter's GDP, while there has been little change or even an increase in these elasticities with respect to the importer's GDP.

The favorable impact of the establishment of the Internal Market on EU trade and activity is also confirmed through counterfactual analyses. By simulating a counterfactual scenario in which tariffs and non-tariff barriers are reintroduced, the study by in 't Veld (2019) shows that intra-EU trade flows would be reduced, leading to a smaller market size and less competition. Considering the effect of the Internal Market on firms' mark-ups over marginal costs, the total estimate of the Internal Market's impact on GDP is around 9% higher on average for the EU, with significant variation across EU countries. In addition, to estimate the economic implications of "unraveling Europe', Felbermayr et al. (2018) utilize a computable general equilibrium (CGE) model and perform econometric evaluations of various stages of European integration. Their gravity analysis shows that the Internal Market has led to the largest benefits to goods trade (36% increase in trade and 9% decrease in non-tariff trade costs) and services trade (82% increase in trade and 34% reduction in trade costs). Also, membership in the common currency and Schengen has contributed significantly to growth. The study highlights substantial heterogeneity among EU members, with smaller, poorer, and more open countries at a relatively greater risk of losing out.

In summary, there is a vast body of research that points to significant economic advantages of the establishment and functioning of the Internal Market for the EU countries. Within the Internal Market, there is a clear and widely accepted agreement that trade in goods has experienced the largest degree of integration, with a need for further deepening of the trade in services. Finally, many studies have shown that smaller and newly joined EU economies have experienced the largest and most notable gains in terms of trade and economic growth.

3. STYLIZED FACTS

The following analysis of the trade restrictions present in the EU economies (intra-EU trade) is based on the developments in the indicator Measure of Aggregate Trade Restrictions (MATR), developed by the IMF and introduced in detail by Estefania-Flores et al. (2022).

MATR is a quantitative tool used to summarize the various trade barriers imposed in the international trade of goods and services. It encompasses tariffs, non-tariff barriers, and limitations on the use of foreign exchange for current transactions. The data used to create the MATR covers more than 150 countries from 1949 to 2020, making it a comprehensive and detailed tool for analyzing trade policy. MATR is based on binary variables related to exchange measures, payment arrangements, imports and exports, and invisible and current transfers. Each sub-indicator is assigned a score of one if a restriction exists in a specific country for a given year (and zero otherwise). MATR is strongly correlated with other measures of trade policy and openness but has the added benefit of greater country and time coverage, as well as more detailed granularity. Previous efforts to construct composite indicators of trade restrictions include Trade Restrictiveness Indices (TRI) by Anderson and van Wincoop (2003)⁵, TRI by Looi Kee et al. (2009)⁶ and the Trade Freedom component of the Heritage Foundation's Index of Economic Freedom (IEF)⁷. These data are complementary to the comprehensive data on tariffs, available by WTO, and data on non-tariff measures (NTMs) developed by UNCTAD.

Figure 1 shows the evolution of the MATR score across the EU countries. These results point to already reached considerable trade liberalization, which is reflected in the low to moderate scores of aggregate trade restrictions. Also, there is an evident improvement in the trade restriction (average score of 5.44 in 2020, compared to 6.75 in 1999).



Figure 1. The Average Score of MATR For 1999 And 2020, By Countries Source: MATR database, Estefania-Flores et al., 2022

⁷ Trade Freedom is a composite measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services. It is available for many countries annually back until 1995.

⁵ TRIs are difficult to implement, since they require disaggregated data on protectionism for many goods, countries, and years, along with the associated import levels and demand elasticities. Consequently, they are available for a limited number of countries and years.

⁶ Authors provide estimates of trade restrictiveness for 78 countries; they combine tariffs and ad-valorem tariff equivalents of NTBs at the tariff line level and aggregate these data. Still, their analysis is limited across countries and by time (only covers the period between 2000 and 2004).

Figure 2 analyzes the sup-components of the MATR indicator across the sample of EU countries. The results for 2020 show that the largest restrictions, on average, persist in the areas of "Exchange measures imposed for security reasons", "Export licenses", "Import licenses and other nontariff measures" and "Import taxes and/or tariffs". Among the countries, Bulgaria and Croatia appear to have comparably higher levels of trade restrictions (10 and 9, respectively), surpassing the average for the entire sample of EU countries. This indicates that there is still room for improvement and that the positive effects from the integration process and the Internal market should come in the longer term.



Note: For brevity, zero – amounting MATR subcomponents, are omitted from the figure. These include State import monopoly, Exports and Export Proceeds, Repatriation requirements, Financing requirements, Proceeds from Invis Trans's & Current Transfers, Repatriation req's, Surrender requirements, Restrictions on the use of funds, Restrictions and/or multiple currency practices, Imports and Import Payments, Foreign exchange budget, Financing requirements for imports.

Figure 2. The Average Score of MATR For 2020, By Country And Sub-Components Source: MATR database, Estefania-Flores et al., 2022

In sum, MATR indicators in the EU countries point to an improvement in their trade liberalization performance. Still, there remains room for further advancement in terms of the completion of the Internal Market, which should be addressed in the years ahead.

4. MODEL AND DATA

This paper aims to estimate the effect of aggregate trade restrictions on the bilateral export flows among the EU countries by using the gravity model of international trade. The dataset is constructed as a panel, covering 28 EU member countries (including Great Britain). Annual data are used over 22 years (from 1999 to 2020). The dependent variable EXPORT corresponds to the logarithm of the nominal bilateral trade flows from exporter i to importer j at time t. Except for standard independent variables used in the model of Anderson and van Wincoop (2003), additional variables such as the "remoteness indexes" are added to the equation to account for multilateral resistance (Yotov et al., 2016). Two different equations using the OLS estimator are used in this paper:

$$LnEXPORT_{ijt} = \alpha_0 + \alpha_1 \ln GDP_{it} + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln DISTANCE_{ijt} + \alpha_4 EURO_{ijt} + \alpha_5 BORDER_{ijt} + \alpha_5 LANG_{ijt} + \alpha_5 \ln MATR_{it}$$
(1)

$$LnEXPORT_{ijt} = \alpha_0 + \alpha_1 \ln GDP_{it} + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln DISTANCE_{ijt} + \alpha_4 EURO_{ijt} + \alpha_5 BORDER_{iit} + \alpha_5 LANG_{iit} + \alpha_5 \ln MATR_{it} + \alpha_4 \ln REM_EX_{it} + \alpha_5 \ln REM_IM_{it}$$
(2)

To control the unobserved multilateral resistance and potentially for any other observables and unobservable characteristics that vary over time, we use exporter and importer fixed country effects in the third equation. Since the created matrix had too many rows, we were not able to use fixed-time effects. The final (fourth) equation is reformulated in multiplicative form and re-estimated by applying the PPML estimator instead of the OLS estimator. The use of the PPML estimator accounts for heteroscedasticity (Silva & Tenreyro, 2006) and ensures that the gravity-fixed effects are identical to their corresponding structural terms.

$$LnEXPORT_{ijt} = \pi_{it} + \chi_{jt} + \alpha_1 \ln DISTANCE_{ijt} + \alpha_2 EURO_{ijt} + \alpha_3 BORDER_{ijt} + \alpha_4 ANG_{ijt} + \alpha_5 \ln MATR_{ijt} + \varepsilon_{it}$$
(3)

$$EXPORT_{ijt} = \exp[\pi_{it} + \chi_{jt} \alpha_0 + \alpha_1 lnDISTANCE_{ijt} + \alpha_2 EURO_{ijt} + \alpha_3 BORDER_{ijt} + \alpha_4 lnLANG_{ijt} + \alpha_5 lnMATR_{ijt}] + \varepsilon_{it}$$
(4)

The influence of certain independent variables on EU members' exports is investigated by using the statistical software STATA. Since we want to explore the factors that influence the level of bilateral trade between an importing country and an exporting country, the dependent variable is *TRADE* (EXPORTijt). The trade variable represents the logarithm of the export of each individual EU country to its EU trading partners in absolute values, in million US dollars and it is extracted from the Direction of Trade Statistics, IMF.

Independent variables included in the regressions are the real GDP of the domestic county, real GDP of the trade partner, distance, common border, common language, membership in the Eurozone, the geometric mean of the values of the MATR index of both imported and exported and remoteness indexes of exporter and importer.

Gross domestic product is a standard variable used in gravity models since the model is based on Newton's law of universal gravitation. In other words, the gravity equation for trade states that the trade flow from country *i* to country *j*, is proportional to the product of the two countries' GDPs. The variable GDP in this paper is expressed in American dollars in prices from 2015, and it is extracted from the World Bank Development Indicators. The expectation is that the coefficient should be statistically significant and positive, thus meaning that an increase in the GDP of the domestic or GDP of the trading partner should increase the intensity of mutual trade. The coefficient usually has a value of around 1, but even smaller values can be logical since smaller countries tend to be more open to international trade.

The variable *EURO* is a binary variable, meaning that if both EU countries are members of the Eurozone in a specific year, the variable has a value of 1. We expect a positive correlation with the trade flows since the introduction of the common currency influenced the elimination of transactional costs and capital restrictions.

The variable *DISTANCE* is a standard variable applied in gravity models measuring the geographical distance between trading partners. The coefficient measuring distance should be significant and negative since the expectation is that when the distance between two countries is higher, it should likely negatively impact their bilateral trade. In this paper, we used data on the geographical distance between the economic centers of two countries from the website WorldAtlas (n.d.). The variables BORDER and LANG are binary variables. The possession of a common border and common language between trading partners *i* and *j*, is noted with 1, or 0 otherwise.

The indicator *Measure of Aggregate Trade Restrictions (MATR)* uses data from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. MATR is an empirical measure of how restrictive official government policy is towards the international flow of goods and services. As a result, MATR potentially varies between 0 and 22, with a higher score indicating more restrictions (in practice MATR varies between 2 and 21) (Estefania-Flores et al., 2022). To better interpret the results, we descale the index from 0-100. The relationship between the indicator and the trade is inverse, meaning that the more the country has restrictions the less will trade with its partners.

This model also includes an indicator of economic *REMOTNESS*. The remoteness variable, both on the exporter side, lnREM_EXPi,t, and on the importer side, lnREM_IMPj,t, are constructed, respectively, as the logarithms of output- and expenditure-weighted averages of bilateral distance (Head, 2003). The index statistically identifies each country's distance from world economic activity. It means that the countries that are geographically distant, have higher international trade costs, and that causes a lower volume of trade as a proportion of GDP. Trade between two countries depends not only on the direct trade costs between these countries but also on how remote they are from the rest of their trading partners, which is captured by the multilateral resistance.

5. **RESULTS**

For estimating the effect of aggregate trade restrictions on the bilateral trade flows among the EU countries we have run four regressions. The results are given in Table 1. The first regression is ordinary least squares regression (1), in the second we control for multilateral resistance (2), in the third one we add fixed effects on the second regression (3), and in the fourth regression, we use the PPML model to account for heteroscedasticity (4).

| | OLS | OLS controlling multilateral resistance | OLS controlling multilateral resistance with fixed effects | PPML |
|---------------------------------|-------------|---|---|------------|
| | (1) | (2) | (3) | (4) |
| Sample | 1999-2020 | 1999-2020 | 1999-2020 | 1999-2020 |
| Cross-Section | 756 | 756 | 756 | |
| Observations | 16497 | 16497 | 16497 | 16497 |
| Log (Distance) | -1.2141*** | -1.2960*** | -1.3305*** | -0.8570*** |
| Log (GDP_home) | 0.9971*** | 1.3249*** | | |
| Log (GDP_partner) | 0.8145*** | 0.8124*** | | |
| Eurozone | 0.1522*** | 0.0958*** | 0.6746*** | 0.5877*** |
| Common border | 0.6588*** | 0.6479*** | 0.3835*** | 0.3677*** |
| Common language | -0.1767*** | -0.1683*** | 0.1136*** | 0.0320 |
| Log (MATR) | -0.2424*** | -0.1130*** | -1.4535*** | -0.7246*** |
| Log (Exporter remoteness index) | | 0.3146*** | | |
| Log (Importer remoteness index) | | 0.2530*** | | |
| Constant | -31.4190*** | -58.5910*** | 20.9886*** | 15.9715*** |
| R-square | 0.8561 | 0.8583 | 0.8848 | 0.8808 |
| Adjusted R-square | 0.8560 | 0.8583 | 0.8613 | 0.8808 |

Table 1. Results from the estimated models

Note: The p-values read as follows: *p<0,10;**p<0.05; ***p<0.01

Source: Author's estimates

The effect of most independent variables is stronger in equations (2), (3) and (4), than in column (1) or OLS regression. These results suggest that estimates in the first equation did not account for multilateral resistances, which can lead to biases in the estimates of the gravity model. The second and third equations take into consideration the remoteness indexes and prove that both exporter and importer remoteness indexes are positive and statistically significant. Adding fixed effects in the third equation, reinforce the results in the second equation. And final equations using the PPML model, account for heteroscedasticity, or in case there are zero trade flows, which is not the case in this dataset. Therefore, the preferred model is the third equation, and we will base our explanation on the results from the third regression.

The general fit of the model is high, explaining more than 80% of the variation in trade (export). Since the results are stable in all four equations, except for the language variable, the results are robust. It is evident that the analyzed variables are statistically significant in all four regressions and bear the same sign (except language). This gives the impression that the results are stable and robust. R2 and adjusted R2 are more than 85% which points out that the independent variables explain on a satisfactory level the dependent variable trade (export).

The results for the variable GDP are significant with a positive sign explaining that higher GDP between the exporter and the importer countries could have a positive effect on increasing their mutual trade. This explanation is very logical from the international economics point of view and thus the results are expected.

The result for the variable Distance is significant and negative as expected. Increasing the distance between the trading partners influences decreasing their mutual trade. In this case, a 1% increase in the mutual distance between the trading partners could lead to a 1.33% decrease in their trade.

The variable Eurozone is also significant and with a positive sign. This indicates the positive effects of the implementation of a common currency among EU member countries. Thus, in this direction, our results show that if both EU countries are part of the Eurozone, it could increase their mutual trade by 0.67%.

The results from the dummy variables: common border and common language are also as expected: significant and with positive signs meaning that countries that share the same border and use a common language could easily increase their trade.

The results for the MATR index are significant and with negative signs. This implies that a 1% decrease in mutual trade restrictions could lead to a 1.45% increase in their mutual trade. The value of this variable indicates that there is still significant space that EU member countries could work on to alleviate certain policies that have restrictive influence over trade. In this regard, we could say that the points where EU member countries could work more to annulate these trade restrictions are those where the countries have the highest values of the MATR index: exchange measures imposed for security reasons, export licenses, import licenses and other nontariff measures and import taxes and/or tariffs. It is also worth stressing that the values of the subcomponents of the MATR indicator give the direction where policy measures should be directed to ease trade. In the case of these four components of the MATR indicators, the countries have reported that there is at least one restriction persisting. Each sub-indicator is assigned a score of one if a restriction exists in a specific country for a given year, and zero if there is no restriction. So, these values should be analyzed in more detail to discover their magnitude and influence over trade.

6. CONCLUSION

The goal of this paper is to explore the drivers and constraints of intra-EU trade. Eurostat data and results from many empirical studies indicate the positive effects of the process of regional economic integration on increasing intra-EU trade and the functioning of the Internal Market. However, with this analysis, we try to explore what could be the remaining constraints for increasing the benefits for all EU members and especially paying attention to the newcomers and small EU economies. For this purpose, we have applied the MATR indicator to summarize the various trade barriers imposed in the international trade of goods and services. In the analysis, we have covered 28 EU member countries, including Great Britain, and a period of 22 years, from 1999 to 2020.

For better robustness of the results, we have applied four estimations of the model and we have decided that the best results are obtained with the OLS model controlling for multilateral resistance and with fixed effects. The results have shown that countries that have higher GDPs, that are closer to each other, and that share a common border and common language trade more and could trade more. Apart from these classical gravity model aspects, in this analysis, we have estimated the influence of the application of common currency and the composite IMF measure - Measure for Aggregate Trade Restrictions. In this regard, the estimations have shown that participation in the Eurozone has positive effects on increasing intra-EU trade. EU member countries that are not part of the Eurozone could consider this result and it is expected the application of the common currency could lead to an increase in trade of 0.67%. As far as the MATR indicator is concerned the estimation has shown that its importance is significant for increasing trade and that a 1% decrement in mutual trade restrictions between the countries could lead to 1.45% of intra-EU trade. We consider that this is a very important result and should be analyzed more deeply to estimate which are the real constraints for increasing intra-EU trade and thus enjoying all the benefits from the EU Internal market. What we could say from a more detailed analysis of the values of the separate categories of measures included in the calculation of MATR is that the worst values, or the area where EU-member countries have the worst results are: exchange measures imposed for security reasons, export licenses, import licenses, and other nontariff measures and import taxes and/or tariffs. Apparently, in these four fields, there are certain measures that EU member countries apply and those hinder their mutual trade and represent a constraint.

In this regard, we suggest that this analysis should be considered, and a more precise investigation could be performed to enable the transformation of those constraints into drivers for increasing intra-EU trade. The results from this study should be specially considered by the small and new-comer economies and the members that are still not part of the Eurozone.

References

- Anderson, J., & Neary, P. (2005). Measuring the Restrictiveness of Trade Policy, Boston, MIT Press.
- Anderson, J. E., & van Wincoop, E. (2003). Gravity with Gravitas: A Solution to the Border Puzzle. American *Economic Review*, 93(1), 170-192. https://doi.org/10.1257/000282803321455214
- Beck, K. (2020). Determinants of Intra-Industry Trade: An Investigation with Bma for the European Union. *Journal of International Business Research and Marketing*, 5(6), 19-22. https://doi.org/10.18775/jibrm.1849-8558.2015.56.3003
- Coughlin, C. C. (2010). Measuring International Trade Policy: A Primer on Trade Restrictiveness Indices. *Review*, 92(5). https://doi.org/10.20955/r.92.381-94

- Estefania-Flores, E., Furceri, D., Hannan, S. A., Ostry, J. D., & Rose, A. K. (2022). A Measurement of Aggregate Trade Restrictions and their Economic Effects. IMF Working Papers, WP/22/1. https://doi.org/10.5089/9781616359645.001
- European Commission. (2023). Annual Single Market Report: Single Market at 30, Commission Staff Working Document.
- Eurostat. (2022). International Trade in Goods An Overview, Eurostat Statistics Explained.
- Felbermayr, G., Groschl, J., & Heiland, I. (2018). Undoing Europe in a new quantitative trade model. ifo Working papers 250-2018, January 2018.
- Freeman, D., Meijerink, G., & Teulings, R. (2022). Trade benefits of the EU and the Internal Market. CPB Communication.
- Gunnella, V., Lebastard, L., Lopez-Garcia, P., Serafini, R., & Mattioli, A. Z. (2021). The Impact of the Euro on Trade: Two Decades into Monetary Union. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3941630
- Head, K. (2003). "Gravity for beginners", mimeo, University of British Columbia.
- Imbruno, M. (2021). A micro-founded approach to exploring gains from trade integration: Evidence from 27 EU countries. *The World Economy*, 44(3), 706-732. https://doi.org/10.1111/ twec.13027
- in 't Veld, J. (2019). The economic benefits of the EU Single Market in goods and services. *Journal of Policy Modeling*, 41(5), 803-818. https://doi.org/10.1016/j.jpolmod.2019.06.004
- Looi Kee, H., Nicita, A., & Olarreaga, M. (2009). Estimating Trade Restrictiveness Indices. *The Economic Journal, 119*(534), 172-199. https://doi.org/10.1111/j.1468-0297.2008.02209.x
- Mayer, T., Vicard, V., & Zignago, S. (2019). The cost of non-Europe, revisited*. *Economic Policy*, *34*(98), 145-199. https://doi.org/10.1093/epolic/eiz002
- The National Board of Trade. (2015). Economic Effects of the European Single Market Review of the Empirical Literature, Kommerskollegium Report, https://www.heritage.org/index/trade-freedom.
- Silva, J. S., & Tenreyro, S. (2006). The log of gravity. *The Review of Economics and Statistics*, 88(4), 641-658.
- Spornberger, J. (2022). EU integration and structural gravity: A comprehensive quantification of the border effect on trade. *Review of International Economics*, *30*(4), 915-938. https://doi.org/10.1111/roie.12589
- Stehrer, R., Leitner, S., Marcias, M., Mirza, D., Pindyuk, O., Siedschlag, I., Stöllinger, R., & Studnicka, Z. (2016). The Evolving Composition of Intra-EU Trade, *wiiw Research Report*, No 414.
- WorldAtlas. (n.d.). http://www.worldatlas
- Yotov, Y. V., Piermartini, R., Monteiro, J.-A., & Larch, M. (2016). An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model. https://doi.org/10.30875/abc0167e-en