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RELEVANCE OF TRADE FACILITATION IN EMERGING COUNTRIES EXPORTS

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Abstract
The objective of this article is to analyse trade flows in emerging nations with a maritime boundary, where trade facilitation plays a decisive role in their international development. In order to detect possible patterns in performance, we apply the economic approach of gravity models using the World Bank Logistic Performance Index (LPI) as a good proxy of trade facilitation. The results of the estimation lead to the conclusion that the more complex the transportation of goods is, the more influential the logistics indicator, trade facilitation being most prominent in Middle East exporters.

Keywords: Trade facilitation; gravity model; emerging countries; exports, logistic.

1. Introduction

Trade facilitation is currently considered one of the key factors in international trade, making tariff barriers increasingly less important. The World Bank Logistic Performance Index is a good indicator of trade facilitation for a broad group of countries. The index values logistics differences between countries and provides a general picture of customs procedures, logistics costs and the quality of the infrastructure necessary for overland and maritime transport.

The objective of this article is to analyse trade flows in emerging nations with a maritime boundary, where trade facilitation plays a decisive role in their international development. The LPI is considered a good proxy of trade facilitation, although it does not cover the entire concept. Furthermore, in order to detect possible patterns in performance, we will use the econometric approach of gravity models traditionally applied in studies on international trade and perform different estimations depending on

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the geographical region the exporting country belongs to and, similarly, differentiating the logistics complexity of the goods exported. This complexity has been evaluated in terms of the degree of goods containerization, the existence of special delivery, the average order size, whether to consolidate a lot of merchandise or otherwise loading units come complete from the factories, the case of tariff codes that give rise to orange or red in customs, etc., all these issues affect the logistical complexity. This ranking is new, as no prior research in the literature has undertaken a similar classification.

The paper is structured as follows. Section 2 reviews the literature focusing on transport cost analysis and/or trade facilitation. Section 3 describes the make-up of the LPI and the value assigned to the different countries. Section 4 explains the gravity model methodology applied in the empirical part of the article. Section 5 details the sample and the variables that will be included in the gravity model. Section 6 presents the results from estimating the gravity model, explaining in detail the importance of the LPI for countries and goods. Finally, Section 7 outlines the main conclusions of the study.

2. Literature Review

Growth in international trade has not been exempt of obstacles that economists are increasingly trying to quantify and estimate. Such obstacles include trade costs and also tariff barriers, which differ depending on the branch of industry. Some empirical studies have modelled costs to determine their influence on trade. In the 1990s, Krugman (1991) emphasize the importance of trade costs in economic geography models. Henderson et al (2001) also underline the important role played by transport costs and their influence on trade. That same year, Limao and Venables (2001) analyse transport costs as the dependent variable, explaining them using variables representing geography and infrastructure.

Later, Clark et al (2004) explore the determinants of maritime costs in the United States, finding port efficiency to be an important factor. Meanwhile, Wilmsmeier et al (2006) show that port efficiency, infrastructures, private sector participation and connectivity between ports in South American countries are significant variables for transport costs. According to Marquez et al (2007), transport costs range from 8% to 13% of the value of imports, depending on the continent. Martinez-Zarzoso et al (2008) study the determinants of maritime and overland transport costs for four industries: agribusiness, ceramics, car industry and machinery, concluding that those variables restrict trade, particularly in the case of industries with high value added. Also, Hoekman and Nicita (2010) compares the predicted trade impacts of a successful Doha Round with the trade effects of actions aimed at reducing domestic trade costs for traders in developing countries and the world as a whole. We show that a relatively small reduction in trade costs will generate trade impacts that are larger than what is likely to emerge even from a relatively ambitious Doha Round market access outcome.

Infrastructure quality has also been shown to be a determinant of trade facilitation (Nordas and Piermartini, 2004). The term trade facilitation is quite widely used in trade studies, although one sole definition does not exist. More specifically, the World Trade Organization, focusing on the public sector, defines it as: “the simplification and harmonization of international trade procedures… involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade”. Other organisations go further by including technical trade barriers, competition policies, governmental procedures and transparency in general. Marquez-Ramos et al (2011) indicate that institutional trade barriers have a greater impact on trade flows than tariff barriers. According to these findings, trade policy negotiation efforts should focus on facilitating trade processes and should be at the forefront of multilateral negotiations.

Wilson et al (2005) define trade facilitation using four indicators, namely port efficiency, customs, regulation and the utilisation of electronic trade, analysing their significance using gravity model. Soloaga et al (2006) apply the same definition to analyse the impact of changes in trade facilitation in Mexican industrial freight flows, as do Wilson and Otsuki (2007) for the case of Southeast Asian countries. Other researchers such as Iwanow and Kirkpatrick (2009) adopt the same definition of trade facilitation for manufacturing exports from Africa, concluding that trade facilitation reform can contribute to boosting exports. More recently, Moïse et al (2011) construct twelve trade facilitation indicators corresponding to the main policy areas under negotiation at the WTO, with the aim to estimate the impact of addressing specific facilitation hurdles in the trade procedures of a given country. One important observation is that the most meaningful results are obtained when all sectors are included. Sector-specific analysis shows that the indicators are particularly significant for manufactured goods, but less so for agricultural goods.

Notwithstanding, other studies have use done sole indicator to estimate trade facilitation and ascertain its impact on exports (UNDP 2001, OECD 2003, Dennis 2006, Decreux and Fontagne 2006). In the same vein, Behar and Manners (2008) use the LPI published by the World Bank to explore the relationships that exist between bilateral exports and logistics. Some authors[1] include the LPI using a gravity equation for exports as an indicator of trade costs, together with others such as Doing Business Costs, concluding that domestic costs are quantitatively important and that the LPI has the largest effect on trade.

On the whole, the empirical studies in the literature coincide that logistics, quantified by trade facilitation, has significant and positive effects on trade flows. This paper mainly differs from the existing literature in that goods are classified according to the

complexity of their transportation in order to detect whether the freight transported influences the logistics applied.

3. Logistics Performance Index

The LPI depicts the logistics performance of countries on the basis of the seven most decisive indicators[2]. All the indicators have been aggregated and duly weighted and scores range from 1 to 5, the highest score representing the best logistics performance. The indicators are:

1. Efficiency of clearance process
2. Quality of trade and transport infrastructure
3. Ease of arranging competitively priced shipments
4. Competence and quality of logistic services
5. Ability to track and trade consignments
6. Domestic logistic costs
7. Timeliness of shipments with the expected delivery time

These indicators suggest that the best logistics performance does not only depend on cost and time, but increasingly on how easy it is to predict the supply chain.

The World Bank has published the LPI on two occasions [Arvis et al, 2007 and 2010], ranking 150 countries[3] and providing an extensive explanation of their development. The first LPI depicts data compiled in 2005 and published in 2007 and the second contains data processed between 2008 and 2009 and published in 2010. The index makes an important statistical contribution by establishing a harmonised scale of all the

countries in order to identify the difficulties faced by bilateral trade, together with their needs in terms of logistics. It is a robust combination of several dimensions from an international perspective that is constructed using standard econometric techniques to maximise significance and improve confidence levels.

Arvis et al (2007) reach the conclusion that the countries with the most predictable, efficient and best managed transport routes and trade procedures are, moreover, those which are most likely to take advantage of technological advantages, economic liberalisation and access to international markets. Therefore, the index manifests that all the developed nations are among the highest ranked countries, while emerging nations occupy completely different positions. For example, China is ranked ahead of the oil producing nations, due to the fact that some of the latter tend to underestimate their logistics. This is the case with Algeria (140th), which is ranked well below neighbouring countries such as Tunisia (60th) and Morocco (94th). The situation in these countries is due to the lack of private sector incentives and pressure to implement institutional reform in favour of trade and transport. However, some emerging economies where manufacturing accounts for a greater share of exports, the private sector has proposed significant logistics reforms.

The latest LPI data published in 2010 indicate that developed nations remain the highest ranked countries (Germany, Singapore, Switzerland and the Netherlands). However, a general decrease in scores is observed that can be explained by the restrictive measures taken by some countries during the global financial crisis. Seven out of the top 10 ranked countries in the 2007 index averaged scores above four points, whereas in 2010 only four countries achieved that average. In reference to the 10 lowest ranked countries, the 2010 index registers changes in regard to 2007, with medium to low

income countries from Africa occupying those positions. Particularly surprising is the case of Sudan, which fell down the ranking from 64th in 2007 to 146th in 2010.

The results of both the 2007 and the 2010 LPI clearly show that there is a logistics gap between wealthy and emerging nations that is difficult to overcome. Nevertheless, it is worth highlighting the improvement recorded by some countries in aspects related to the modernisation of customs, the use of information technologies and the growth of private logistics services, which has allowed them to climb up the ranking. For example, Colombia improved from 82nd to 72nd and Brazil from 61st to 41st.

4. Methodology

Tinbergen (1962) and Pöyhönen (1963a, b), are generally considered to have pioneered the use of gravity models in international trade, conducting research separately but almost during the same period. Since then, these techniques have been used frequently to analyse international trade. Bergstrand (1985, 1989) found theoretical grounds for bilateral trade in a series of studies that linked gravity equations to monopolistic competition models. Helpman and Krugman (1985) justified the gravity model by introducing non uniform goods with increasing returns to scale. Meanwhile, Otsuki et al (2000) used a gravity equation to explain country trade patterns. Tang (2005) using the modified gravity model examines whether the free trade areas of NAFTA, ANZCER and ASEAN would result in trade creation among the member countries and trade diversion with the non-member countries. More recently, some studies have incorporated variables representing logistic improvements in transport (Hanson and Xiang, 2002; Freund and Weinhold, 2004; Hausman et al, 2005; Djankov et al, 2006; Shepherd and Wilson, 2006; Prabir, 2007; Iwanow and Kirkpatrick, 2009; Portugal-

Perez and Wilson, 2010). All the foregoing papers highlight just how useful this methodology is for the study we aim to undertake in this paper.

The basic notion behind a gravity equation is that bilateral trade can be explained by:

- Factors related to the potential of a country to export goods and services
- Factors that can explain the tendency of a country to import goods and services
- Other forces that attract bilateral trade

In their simplest form, gravity models consider that bilateral trade flows depend positively on the income of both economies and negatively on the distance between them, in line with Newton's law of universal gravitation. Empirical studies usually include dummy variables to capture the effects of factors that can facilitate trade, such as belonging to the same integration agreement and sharing a common language or a common border. The gravity model of international trade used in this research for each group analysed has the following the structure:

$$\text{Log}(X_{ij}) = \beta_0 + \beta_1 \text{Log}(D_{ij}) + \beta_2 \text{Log}(Y_i) + \beta_3 \text{Log}(Y_j) + \beta_4 \text{Log}(P_i) + \quad (1)$$

$$+ \beta_5 \text{Log}(P_j) + \beta_6 \text{Log LPI}_i + \beta_7 \text{Log LPI}_j + \beta_A W + u_{ij}$$

where: X_{ij}: Quantity country i exports to country j
D_{ij}: Distance between country i and country j
Y_i: GDP of country i
Y_j: GDP of country j
P_i: Population of country i
P_j: Population of country j
LPI_i: Logistics Performance Index for country i
LPI_j: Logistics Performance Index for country j
W: Dummy variables

According to equation (1), exports depend on economic, geographic and demographic variables together with logistics variables. Using this approach, most of the variables included in the model are expected to have a significant impact on trade and signs that

are coherent with economic theory. The variable distance is an indicator that estimates all trade costs, but which is not exempt of problems. In the first place, this measure assumes that transport costs do not depend on the mode used and, in the second place, that capital cities are a good indicator of the economic centre of a country. The effect of distance between countries (β_1) should be negative and statistically significant, because proximity promotes trade.

Theoretically, the GDP coefficients of both the exporter and also the importer (β_2 and β_3) will be positive and statistically significant. The reason for this is that the larger an economy is, regardless of whether the country is buying or selling, the more exports and imports can be expected. Furthermore, the population coefficient for the exporting country (β_4) could be positive or negative depending on whether the most populated country exports less due to absorbing domestic production, or exports more due to technological and logistics variables associated to the level of economic development dominating. At the same time, the sign of the importer population coefficient (β_5) is also ambiguous for the same reasons as those stated above.

In accordance with the objective of this research, we include the exporter and importer LPI in the gravity model. Both variables have coefficients (β_6 and β_7) that represent the importance of trade facilitation in export flows. Consequently, a positive sign is expected in both cases. Finally, a series of dummy variables represent the existing social and cultural similarities between countries in the geographical regions analysed (Border, official languages, second languages, colonisers).

5. Variables and Sample

The gravity model used in this study has been estimated for exports in 2005 and in 2008, in both cases for countries that belong to five emerging geographical regions and which have a maritime boundary, namely:

- South America: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Uruguay and Venezuela.
- Africa: Algeria, Benin, Cameroon, Egypt, Gabon, Gambia, Ghana, Kenya, Madagascar, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Senegal, South Africa, Sudan, Togo and Tunisia.
- Middle East: Saudi Arabia, Cyprus, United Arab Emirates, Iran, Israel, Jordan, Oman, Pakistan, Qatar, Syria, Turkey and Yemen.
- Far East: Bangladesh, China, the Philippines, Hong Kong, India, Indonesia, Malaysia, Singapore, Sri Lanka, Thailand and Vietnam.
- Post-soviet States [4]: Russia, Poland, Rumania, Bulgaria, Ukraine, Lithuania, Latvia and Estonia.

Furthermore, the importers included in the model are the 150 countries whose LPI for 2005 and 2008 was published by the World Bank. As a result, the research focuses mainly on maritime trade flows where the ultimate goal is to analyse the importance of trade facilitation.

Trade flows refer to the exports of five groups of goods classified according to the logistics complexity they entail[5]. The groups are as follows:

Group 1. Goods that entail no logistics problems. This group includes goods that are easily transported due to not being fragile or requiring any type of temperature control.

Generally speaking, these goods are classified as textiles and textile products and also some chemical products related to albuminoidal substances and some food products.

Group 2. Goods that entail few logistics problems. This group includes objects with a certain degree of fragility, such as ceramics and glass, or require special handling, such as wood, plastic, minerals, chemical products (fertilisers and mineral extracts), flour, wheat or livestock.

Group 3. Goods that entail conventional logistics problems. This group includes goods that require minimum special conditions to be transported, due to either being delicate textiles such as silk or velvet, or to being chemical products (Fluorine, Chlorine, Iodine, essential oils, among others). The group also includes common metals and metal manufactures such as padlocks, locks, spades, hoes, aluminium, lead, zinc, tin, etc. Other products include vegetables that require refrigeration, such as potatoes, coffee or peanuts.

Group 4. Goods that entail complex logistics problems. This group includes goods that require optimum refrigeration, such as meat, cold cuts, milk or cream. Particularly delicate products are also included, such as optical instruments or heavy goods such as machinery, engines or electrical material. Finally, certain toys with wheels, such as tricycles, scooters or pedal cars, are also included.

Group 5. Goods that entail highly complex logistics problems. This group includes goods that are especially delicate due to being alive or somewhat dangerous, such as weapons, gunpowder, etc. Goods that are highly valuable in monetary terms, such as pearls and works of art, are also included. Similarly, modes of transport that are difficult to move (tractors, balloons or airships) also come under this category of goods.

Goods have been grouped on the basis of logistics complexity. We have used TARIC chapters (two-digit level) to build the groups, and this classification has been created by the authors. While some groups display a certain degree of heterogeneity, the dominant good always takes precedence.

The information on trade flows comes from the *Comtrade* database (United Nations). As regards the explanatory variables, distance between countries expressed in kilometres has been calculated as the straight-line distance between capitals[6], which acts as an initial estimation in view of the difficulty involved in locating producer regions that are often spread across the territory of exporting and importing countries. GDP (in dollars) and population data have been obtained from the United Nations database and the LPI for exporters and importers come from the World Bank. Finally, the series of dummy variables that describe the social and cultural features of countries that make up the areas have been obtained from CEPII.

The data sample has been revised in order for the results obtained in the estimation to reflect reality. More specifically, we found that no multicollinearity exists between the variables using the matrix of correlations and the identification of the Variance Inflation Factor (VIF) as a basis[7]. Furthermore, residuals are shown by graphs to be normal and lacking heteroskedasticity.

6. Results

We initially estimated a gravity model to determine whether international trade flows had registered significant changes between 2005 and 2008. By applying the model to the entire set of countries and all goods, we obtained the following results[8] (Table 1).

[Table 1]

In the estimations, the model can be said to fit the observations well, as the determination coefficient R^2 recorded values of more than 0.6 in both cases. All the variables used are significant and display the expected signs in accordance with the initial hypotheses. More specifically, the coefficient of distance is negative, indicating the geographical proximity boosts trade between countries and the indicators of wealth register positive signs, which implies that countries trade more the larger their GDP.

In this case, both the importer and exporter LPIs display positive and significant coefficients, which show the importance of logistics performance for emerging country exports.

The results of the OLS estimation of the gravity model show the two years under study generally resemble each other, in that the factors influencing trade flows remained unchanged during the sample period. For this reason, we have focused on 2008 for the analysis of geographical regions and types of products.

Table 2 below presents the results of the coefficients estimated using the exporter LPI, after applying OLS to equation (1), by group of products and geographical region.

[Table 2]

The results show that the emerging exporter logistics index is largely significant and positive, confirming the importance of logistics in increasing export flows. The index figures the most prominently in the Middle East, where the goods that entail the most complex logistics record values of more than one. The Far East is second, recording a score of 0.743 for goods that entail some difficulty in transporting (group 3). In contrast, in less developed countries such as the Post-soviet nations, the index for most of the goods is not significant or, if it is, records a very low coefficient, confirming the

original notion in Arvis (2007) that institutional incentives to improve transport are practically non-existent in the least developed nations. In the case of African nations, an increase is observed in the value of the index coefficient as the logistical complexity of goods increases (with the exception of group 4).

[Table 3]

In the case of the coefficients estimated for the importer index, the results are slightly more significant than for exporters, as scores in all areas and for all goods are significant and positive. However, the value of the coefficient is lower in many cases, indicating less importance than in the case of the exporter.

Both tables (2 and 3) show that logistics is important both for exporting and importing. However, there is no general tendency toward increasing the relevance of the index when transport becomes more complex, as one would expect a priori.

The appendix (Tables A2, A3, A4, A5 and A6) includes the results of all the regressions estimated by OLS for the five geographical regions and five types of goods. The results obtained lead us to the conclusion that goodness-of-fit is generally good, as the determination coefficient exceeds 0.5 in almost all regressions.

If we compare the geographical regions, the coefficient of the distance variable, one of the most important in gravity models, is significant and negative in all cases, fulfilling the theoretical hypothesis that nearby countries tend to trade more. In the case of the Post-soviet nations and South America, this variable has the greatest influence on trade flows for all the groups of goods.

Moving on, exporter and importer GDP, which depicts the wealth of a country, records significant and positive coefficients for all goods and for most of the countries under

consideration. Therefore, the wealthier a country, the more trade flows. The exporter population variable, which determines the size of the country, was not significant in South America or the Post-soviet Nations and was omitted from the regressions to improve the estimation. Finally, very few dummy variables were found to be significant, as was the case with sharing a common border in Africa or being colonised by the same country in the case of Post-soviet Nations.

7. Conclusions

The LPI measures supply chain development in a country's international trade. It also provides the opportunity to establish a reference point regarding countries' needs in terms of logistics and offers information to national authorities so they can design policies aimed at reaching out to world markets and promoting economic growth. Developed nations remained the top-ranked countries in both the 2007 and also the 2010 index, although scores have decreased across the board as a result of the more restrictive policies that countries have implemented to combat the economic crisis.

By incorporating the LPI into a gravity model, this paper has been able to quantify how important this indicator is for the export flows of emerging nations. The results of estimating the model using OLS lead us to the conclusion that the index is most important in the case of the exporters from the Middle East. Furthermore, the more difficult a good is to transport, the more important this index becomes. In the case of importing nations, the index plays a less prominent role in trade flows, but it is still positive and significant in all geographical areas and for all the goods under analysis. Therefore, we can conclude that the results obtained lend support to all measures taken to improve logistics performance.

As regards the future, international trade is aiming to streamline the entire logistics process in order to make it more efficient and less expensive. One example of this is the Authorised Economic Operator (AEO), created in 2008 for customs operations in European Union (EU) countries. The idea behind the AEO is to make the EU the most competitive region in the world in terms of logistics, on the basis of speeding up services, supply chain security and safety and paperless customs clearance (Garcia, 2008).

As regards maritime trade, in view of the important role that ports play in developing nations, it is essential to help port governance models mature from “Service Ports” to “Landlord Ports” so that private companies can operate port terminals. Doing so would improve the efficiency of logistics performance, while at the same time, the regulatory role that the public sector adopts in such systems would also help to achieve competitive prices for berthing and high levels of regularity and punctuality on behalf of ocean carriers.

In particularly, the progress in “Community Port Systems” and their implementation in emerging nations provide considerable advantages. The disappearance of paperwork not only improves the quality of logistics services, but also allows freight to be traced and more reliable customs dispatches. Furthermore, community port systems also facilitate the fight against corruption inherent in customs activity in many regions.

Similarly, these types of tools make vessel calls at port much more economical, further reinforcing the previous statements and providing the conditions for a Single Port Window (berth, freight in terminals, gate control, customs according to circuit colour, other inspections) as a substantial part of the Single Window for Foreign Trade.

Finally, we conclude by insisting on the need for the competent International Agencies in this area to continue disseminating the best practices and for multilateral financial

organisations to provide resources so that the efficiency of industry logistics chains does not hinder international trade.

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Footnotes

1. See Hoekman and Nicita (2011), also Korinek and Sourdin (2011)
2. The 2010 LPI only consider six indicators (domestic logistics costs were excluded).
3. The 2010 LPI includes 155 countries. However, only the 150 countries included in the 2007 LPI were considered in the empirical part of the research to be able to compare the two indexes.
4. This group includes some countries that belong to the European Union, but which we considered appropriate to include with other less developed nations due to their level of logistics development.
5. Table A1 in the appendix details the TARIC codes of the goods that make up each group.
6. http://www.cepii.fr/anglaisgraph/bdd/distances.htm
7. The VIF represents the increase in variance due to the presence of multicollinearity. VIFs are on the diagonal of the matrix C^{-1}, which is the inverse

of the matrix of correlations C. A predictor variable with a VIF greater than 10 (which is the same as accepting that R^2=0.90 indicates a good linear relationship), could cause multicollinearity. See Table A7 in Appendix.

8. The results should be interpreted taking into account that have been removed the zero observations.

APPENDIX

Table A1. Groups of Goods

	TARIC Codes
Group 1	14, 15, 17, 18, 23, 35, 46, 51, 52, 53, 54, 55, 56, 57, 58, 59, 66, 67
Group 2	1, 10, 11, 19, 20, 21, 22, 24, 25, 26, 31, 32, 39, 40, 42, 44, 45, 47, 65, 68, 69, 89
Group 3	5, 7, 9, 12, 28, 29, 33, 34, 37, 38, 41, 43, 48, 49, 50, 60, 61, 62, 63, 64, 70, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 86, 94, 96, 98
Group 4	2, 4, 13, 16, 27, 84, 85, 90, 91, 92, 95
Group 5	3, 6, 8, 30, 36, 71, 87, 88, 93, 97

Table A2. Gravity Model Results. Middle East **.2008**

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Log distance	-0.361***	-0.471***	-0.419***	-0.491***	-0.529***	-0.443***
Log exporter GDP	-0.148	0.129	-1.067***	0.031	-0.159	0.099
Log importer GDP	0.393***	0.069	0.446***	0.373***	0.413***	0.387***
Log exporter population	1.273**	0.754*	2.142***	0.969***	0.722*	0.811***
Log importer population	0.215**	0.390***	0.170***	0.220***	0.149**	0.235***
Exporter LPI	0.837*	0.624*	1.725***	1.006***	1.057***	0.647***
Importer LPI	0.137*	0.440***	0.306***	0.231***	0.120*	0.287***
Border	0.047	0.052	0.007	0.036	-0.037	0.008
Official language	0.154**	0.193***	0.121**	0.149***	0.138**	0.117***
Second language	0.032	0.012	0.050	-0.015	0.057	0.048
Colony	0.072	0.016	0.085*	0.027	0.022	0.025
Common coloniser after 45	0.116**	0.191***	0.165***	0.143***	0.144***	0.148***
Colonial relationship after 45	-0.023	-0.021	-0.042	0.007	0.032	-0.030
Are or have been the same country	-0.020	-0.070*	-0.060	-0.018	-0.068	-0.036
Observations	495	580	624	599	587	686
R^2	0.52	0.58	0.65	0.69	0.58	0.714

Note: ***, **, *, indicate significance at 1%, 5% and 10% respectively

Table A3. Gravity Model Results. Far East. **2008**

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Log distance	-0.254***	-0.151***	-0.184***	-0.259***	-0.259***	-0.165***
Log exporter GDP	0.334***	-0.052	-0.026	0.389***	0.618***	-0.125**
Log importer GDP	0.284***	0.379***	0.457***	0.598***	0.616***	0.452***
Log exporter population	0.433***	0.697***	0.769***	0.264**	-0.082***	0.654***
Log importer population	0.386***	0.292***	0.283***	0.203***	0.112**	0.210***
Exporter LPI	0.372***	0.522***	0.743***	0.456***	-0.001	0.664***
Importer LPI	0.353***	0.387***	0.485***	0.387***	0.304***	0.419***
Border	0.028	0.032	0.061**	0.038	0.029	0.064***
Official language	0.014	-0.105***	-0.029	0.041	0.000	0.027
Second language	-0.002	0.132***	0.055	0.035	0.011	0.041
Colony	-0.096	0.026	0.015	-0.002	0.011	0.011
Common coloniser after 45	0.049**	0.073**	0.059**	-0.012	-0.014	0.059***
Colonial relationship after 45	0.020	-0.027	0.016	-0.030	-0.003	-0.013
Are or have been the same country	-0.008	0.032	0.024	0.046*	0.032	0.021
Observations	871	942	944	806	862	956
R^2	0.65	0.67	0.77	0.80	0.65	0.81

Note: ***, **, *, indicate significance at 1%, 5% and 10% respectively

Table A4. Gravity Model Results. Africa. 2008

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Log distance	-0.492***	-0.466***	-0.508***	-0.569***	-0.336***	-0.454***
Log exporter GDP	0.274***	0.716***	0.422***	1.144***	0.331***	0.698***
Log importer GDP	0.108	0.086	0.100	0.053	0.129	0.222***
Log exporter population	0.095	-0.108	-0.030	-0.428***	-0.162**	-0.030
Log importer population	0.398***	0.445***	0.455***	0.419***	0.180**	0.409***
Exporter LPI	0.292***	0.442***	0.534***	0.333***	0.740***	0.296***
Importer LPI	0.336***	0.341***	0.509***	0.633***	0.309***	0.542***
Border	0.114**	0.131***	0.122***	0.106**	0.156***	0.115***
Official language	0.009	0.144**	0.096	0.189**	0.174**	0.192***
Second language	0.156**	0.075	0.089	0.054	0.130*	0.045
Colony	0.101	0.094	0.115**	0.051	0.143**	0.040
Common coloniser after 45	-0.010	-0.052	-0.013	0.039	-0.077	0.009
Colonial relationship after 45	0.005	-0.017	-0.001	0.058	-0.037	0.027

Are or have been the same country	-0.014	0.101**	0.038	0.093**	0.056	0.044
Observations	692	849	947	884	743	1587
R^2	0.35	0.46	0.455	0.516	0.365	0.541

Note: ***, **, *, indicate significance at 1%, 5% and 10% respectively

Table A5. Gravity Model Results. South America. **2008**

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Log distance	-0.665***	-0.758***	-0.802***	-0.884***	-1.034***	-0.666***
Log exporter GDP	0.531***	0.581***	0.742***	1.185***	0.868***	0.734***
Log importer GDP	0.295***	0.315***	0.435***	0.414***	0.616***	0.449***
Log exporter population	-	-	-	-	-	-
Log importer population	0.367***	0.325***	0.430***	0.250	0.147**	0.244***
Exporter LPI	0.492***	0.461***	0.286***	0.058***	0.351***	0.265***
Importer LPI	0.204***	0.472***	0.505***	0.437***	0.169**	0.524***
Border	0.020	0.020	0.033	0.010	-0.017	0.013
Official language	-	-	-	-	-	-
Second language	-	-	-	-	-	-
Colony	0.022	0.035	0.039	0.116***	0.035	0.059**
Common coloniser after 45	0.056	0.036	0.137***	-0.016	0.209***	0.050*
Colonial relationship after 45	0.137***	0.024	0.029	-0.026	0.066	0.024
Are or have been the same country	0.055	0.046	0.065*	0.033	0.022	0.030
Observations	973	1243	1327	1183	929	1613
R^2	0.42	0.54	0.57	0.59	0.52	0.64

Note: ***, **, *, indicate significance at 1%, 5% and 10% respectively

Table A6. Gravity Model Results. Post-soviet nations. **2008**

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Log distance	-0,868***	-0,732***	-0,784***	-0,619***	-0,833***	-0,652***
Log exporter GDP	0,404***	0,623***	0,675***	0,536***	0,589***	0,635***
Log importer GDP	0,310***	0,486***	0,390***	0,549***	0,396***	0,591***
Log exporter population	-	-	-	-	-	-
Log importer population	0,374***	0,171***	0,281***	0,094*	0,157**	0,135***
Exporter LPI	0,168***	-0,031	-0,010	-0,022	0,193***	-0,044
Importer LPI	0,174***	0,248***	0,492***	0,402***	0,132*	0,349***
Border	0,118	0,027	0,023	0,085**	0,004	0,030
Official language	0,042	0,024	0,014	0,035	0,023	0,024
Second language	-0,033	0,021	0,057	0,061	0,045	0,037
Colony	0,095	0,041	0,024	0,039	0,065	0,033

Common coloniser after 45	0,336**	0,131***	0,168***	0,183***	0,215***	0,175***
Colonial relationship after 45	0,027**	0,059	0,067	0,087	0,092	0,060
Are or have been the same country	0,008	-0,012	0,027	-0,002	0,007	0,002
Observations	601	832	818	872	687	956
R^2	0,56	0,63	0,71	0,70	0,60	0,76

Note: ***, **, *, indicate significance at 1%, 5% and 10% respectively

Table A7. VIF Results

2008	**Africa**	**Post soviet**	**Far East**	**South America**	**Middle East**
Distance	1,32	1,52	1,32	2,08	1,34
exporter GDP	1,66	1,16	9,44	4,41	3,98
Importer GDP	3,86	5,67	6,12	6,77	7,33
Exporter population	1,68	-	7,72	-	4,18
Importer population	2,07	3,54	3,21	3,78	3,32
exporter LPI	1,31	1,09	4,99	4,3	2,29
importer LPI	2,41	3,11	3,39	3,6	4,41
Border	1,17	1,57	1,45	1,51	1,27
Official language	2,65	1,63	2,26	-	2,38
Second language	2,34	1,59	2,07	-	2,47
Colony	1,26	5,02	6,31	1,17	2,03
Common coloniser after 45	1,44	1,18	1,25	1,02	1,2
Colonial relationship after 45	3,2	4,85	6,31	1,16	1,54
Are or have been the same country	1,7	1,04	1,28	1,45	2,46

Table 1. Gravity Model Results

	2005	2008
Constant	-11.005***	-12.114***
Log distance	-0.462***	-0.462***
Log exporter GDP	0.602***	0.641***
Log importer GDP	0.477***	0.424***
Log exporter population	0.179***	0.218***
Log importer population	0.224***	0.230***
Exporter LPI	0.389***	0.389***
Importer LPI	0.347***	0.441***
Border	0.070***	0.079***
Official language	0.108***	0.121***
Second language	0.033*	0.047**
Colony	0.028*	0.026
Common coloniser after 45	0.080***	0.075***
Colonial relationship after 45	0.029*	0.020
Are or have been the same country	0.027**	0.028**
Observations	7860	5798
R^2	0.641	0.679

Source: own elaboration

Note: ***, **, *, indicate significance at 1%, 5% and 10%, respectively. The dependent variable is the natural logarithm of exports in value ($) from country i to j.

Table 2. Exporter LPI Coefficients in 2008

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Post-soviet nations	0.168***	-0.031	-0.010	-0.022	0.193***	-0.044
Middle East	0.837*	0.624*	1.725***	1.006***	1.057***	0.647***
Far East	0.372***	0.522***	0.743***	0.456***	-0.001	0.664***
Africa	0.292***	0.442***	0.534***	0.333***	0.740***	0.296***
South America	0.492***	0.461***	0.286***	0.058***	0.351***	0.265***

Source: own elaboration

Note: ***, **, *, indicate significance at 1%, 5% and 10%, respectively

Table 3. Importer LPI Coefficients in 2008

	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Post-soviet nations	0.174***	0.248***	0.492***	0.402***	0.132*	0.349***
Middle East	0.137*	0.440***	0.306***	0.231***	0.120*	0.287***
Far East	0.353***	0.387***	0.485***	0.387***	0.304***	0.419***
Africa	0.336***	0.341***	0.509***	0.633***	0.309***	0.542***
South America	0.204***	0.472***	0.505***	0.437***	0.169**	0.524***

Source: own elaboration

Note: ***, **, *, indicate significance at 1%, 5% and 10%, respectively