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ECONOMIC DIPLOMACY AND ITS RELEVANCE IN COUNTRIES WITH DIFFERENT INCOME LEVELS: A PERSPECTIVE FOR TRANSITION ECONOMIES

Ing. Mykhaylo Kunychka[1], PhD; Ing. Leonid Raneta[2], PhD; Diana Steblak[3], PhD

Abstract. The study of the effectiveness of economic diplomacy has become a popular topic in the field of international economic relations. Recent trends are confirmed by a large number of academic studies focusing on the evaluation of the performance of diplomatic and consular offices abroad. This paper represents a new attempt to empirically examine the effectiveness of economic diplomacy using the example of a transition country, based on the activities of Ukrainian foreign representations. Over the last decade, this Eastern European state has experienced significant economic turbulence, political instability and a shift in the vector of foreign economic policy, which is the main impetus for the re-evaluation of its economic diplomacy. Using recent data on export flows, the authors apply a gravity model of trade to assess the impact of economic diplomacy on export activity. The results suggest that embassies are a more relevant means of promoting export flows to low- and middle-income countries.

Key words: economic diplomacy, income level, export promotion, transitive state.

JEL Classification: D31, M51

1. Introduction

The history of trade facilitation is probably as old as the beginning of economic relations between particular nations. References to the first economic relations of an international nature can be traced back to the Old Testament, and the trade agreement between Solomon and Hiram is considered an important diplomatic document of the ancient world. The well-known English diplomat Sir H. Nicolson (1988) describes the sending of trade missions from Athens to Sparta (Nicolson Harold George, 2012). These political and economic relations between the two city-states can undoubtedly be described as the first manifestations of *commercial diplomacy*, which became economic diplomacy as such at the beginning of the 20th century. In the modern era of increased competition in the global economy, developed and developing countries are increasingly resorting to the use of government intervention and support for foreign economic relations through the use of diplomatic instruments such as export promotion offices or traditional diplomatic representations abroad.

In the context of the ongoing commercialisation of international relations and diplomatic activity, the basic task of this study is to verify the effectiveness of economic diplomacy of a selected economy in the field of export promotion. It must be said that this research reflects theoretical ideas about the effectiveness of economic diplomacy instruments depending on the level of development of the host country. Given the theoretical ideas presented below, the authors aim to verify two established hypotheses that the target country's economic diplomacy is effective in promoting export flows to low- and middle-income countries (H1) and ineffective in promoting exports to high income countries (H2). The extended gravity model of trade is applied to total export destinations over the period 2007–2018. The choice of this period is mainly determined by the final stage of the establishment of diplomatic and consular representations of Ukraine and the current framework of individual export flows.

The paper follows the logical structure with the introduction of theoretical rationale and literature background, theoretical model, data and empirical results. Section one provides a brief introduction to the concept of economic diplomacy and its place in the system of traditional diplomacy. Section two

[1] University of Economics in Bratislava, The Republic of Slovakia *(corresponding author)*
E-mail: mykhaylo.kunychka@euba.sk
[2] University of Economics in Bratislava, The Republic of Slovakia
E-mail: leonid.raneta@euba.sk
[3] Uzhhorod National University, Ukraine
E-mail: diana.steblak@uzhnu.edu.ua

provides a theoretical explanation and justification of government intervention in international trade through economic diplomacy instruments. A literature review and recent studies on the relationship between economic diplomacy and trade flows are included in section three. Sections four and five discuss the application of the theoretical model, methodology and data. The empirical results are presented in section six. The last section summarises the findings and contribution of this study.

2. Economic and Commercial Diplomacy: Defining the Concept

As a famous Slovak diplomat once said, from a historical perspective, the economic dimension of diplomacy (economic diplomacy) has not developed discreetly, and from prehistory to the present day it has always been the "*inherent and therefore continuous part of traditional diplomacy*" (Králik Juraj, 2003). The continuous and sustained interaction of economic and traditional diplomacy is logical because the economic dimension of diplomacy has always been a part of traditional diplomacy. Consequently, there is a special link between economic and traditional diplomacy, which makes it possible to draw the close parallels between these two concepts. Firstly, economic diplomacy is a practical activity carried out to implement foreign economic policy, and secondly, similarly to traditional diplomacy (Rusiňák Peter, 2005), it can be seen as an ability to communicate and negotiate with foreign partners. The interaction between economic and traditional diplomacy is perceived in the same way by Csabay (Csabay Marek, 2005), who argues that economic diplomacy cannot be understood separately from the overall diplomacy of the state. Like Kralik, Csabay points out that the interaction between the two concepts has developed naturally and inextricably. Similar conclusions can be found in the work of Rusinak, who sees economic diplomacy as an inherent part of overall diplomacy, and thus wants to clarify the necessity of concentrating the management of foreign economic relations in the foreign office.

References to the economic dimension of diplomacy have deep historical roots, but the beginning of the formation and establishment of the concept of economic diplomacy can be traced back only to the beginning of the second half of the 20th century (Pajtinka Erik, 2007). Various definitions of economic diplomacy can be found in domestic and foreign literature, although the final and precise formulation of this term has not been made in literature. This conceptual diversity can be explained in particular by the preferences and interpretations of different academics or diplomatic practitioners, who use the term rather in pursuit of their own research goals. It should be noted that the term *economic diplomacy* refers to the multinational sense of the word and is based on its tools, methods, activities, etc. In recent decades there has been a controversy over the various established concepts closely related to the term *economic diplomacy*. Terms such as *economic diplomacy* or *commercial diplomacy* are of academic interest for the purposes of this study. In fact, some contradictions in the definitions of these terms can be observed in both domestic and foreign literature (Pajtinka Erik, 2007). The biggest source of confrontation is the definition of terms in different world languages, but also the different interpretation of tools, methods, tasks and activities of economic diplomacy. A more detailed insight into the definition of the concept of economic diplomacy can be found in Saner and Yiu, Lee and Hudson, Bayne and Woolcock or Pajtinka (Saner Raymond, Yiu Lichia, 2003; Lee Donna and Hudson David, 2004; Bayne Nicholas, Woolcock Stephen, 2007; Pajtinka Erik, 2007).

Given the diversity of definitions of economic diplomacy, this phenomenon can be divided into a broader and a narrower group of concepts. In a broad sense, the concept of economic diplomacy is a widespread and generalised phenomenon associated with the processes generated by globalisation trends (Ornatskij, 1980), so it is not the object of interest for this research. Instead, the narrow approach describes this phenomenon from the point of view of the state authorities that aim to fulfil their tasks and functions. Saner and Yiu (Saner Raymond, Yiu Lichia, 2003), for instance, support the thinking of Berridge and James and refer the concept of economic diplomacy to economic policy issues such as "*work of delegations at standard-setting organizations such as WTO…*". Frequently, "*economic diplomacy employs economic resources in pursuit of a particular foreign policy objective*." (Berridge Geoff, James Alan, 2003) In addition to economic diplomacy, the term commercial diplomacy is introduced in foreign literature as well. This concept is often concerned with "*the work of diplomatic missions in support of the country's business and finance sectors in their pursuit of economic success and the country's general objective of national development.*" (Saner Raymond, Yiu Lichia, 2003) According to this definition, commercial diplomacy involves foreign representations like diplomatic missions, which places it in a more specific category. Lee and Hudson describe commercial diplomacy as *the efforts of public officials from Foreign Ministries and overseas missions, as well as private economic actors who support the business and finance sectors of the economy* (Lee Donna, Hudson David, 2004). In addition, economic diplomacy aims to promote investment flows and trade (Lee Donna, Hudson David, 2004). For the purposes of this

paper, the narrow concept of economic diplomacy will be used.

3. Economic Justification for State Intervention

Criticism of the concept of state regulation of international trade is as old as the introduction of the concept of absolute advantage by Adam Smith at the end of the 18th century. In The Wealth of Nations, Smith directly expresses his support for laissez faire and sharply criticises any intervention by *lawmakers* in the free movement of goods (Smith Adam, 1977). Together with the complementary ideas of David Ricardo on comparative advantage, Smith's ideas are still relevant today and form the main pillars of international economics. Ricardo's case on the trade in wine and wool between Portugal and England is widely recognised as evidence of the welfare gains that participation in international trade could bring (Ricardo David, 2001). According to the simple economic ideas mentioned above, free trade is one of the tools that tend to achieve economic efficiency – the idea inherent in economics of using as little of scarce resources as possible to satisfy as many societal needs and wants as possible (Wright Victor, 2009). The concept of economic efficiency is a strong argument for trade liberalisation, which is embedded in most models of international economics, including comparative advantage, neoclassical Heckscher-Ohlin model and other new models of international trade (Krugman Paul R., Obstfeld Maurice and Melitz Marc, 2012).

Classical economists such as Smith and Ricardo, as well as representatives of the neoclassical school of economics, have regularly questioned the artificial management of international trade flows through the instruments of protectionist economic policy, including tariffs, subsidies and other non-standard instruments of promotion such as economic diplomacy. The government interventions in the form of economic or commercial diplomacy on welfare gains are usually compared with trade subsidies (Veenstra van Marie-Lise E. H., Yakop Mina and Bergeijk van Peter A. G., 2010; Yakop Mina and Bergeijk van Peter A. G., 2011; Moons Selwyn J. V. and Bergeijk van Peter A. G., 2017) that initially distort the comparative advantages with artificial movement of factors of production to export promoted inefficient sector. According to the general equilibrium model, the subsidy introduced in the sector with comparative disadvantages as well as in the sector with comparative advantages is likely to suppress the welfare gains from international trade (Grančay, Martin, Tomáš Dudáš and Martin Grešš, 2014) and distort economic efficiency. Yakop and van Bergeijk point to the argument of neoclassical economists that export subsidies are often granted to the industries that produce uncompetitive products, thus inefficiently allocating part of government financial resources (Yakop Mina and Bergeijk van Peter A. G., 2011). As a result, governments allocate their economic diplomacy resources in such an inefficient way that they give a subsidy to certain export industries. Just as export subsidies have a negative impact on domestic consumer surplus, so the results of export promotion through economic and commercial diplomacy instruments are also negative. It will be more economically rational for domestic firms to sell subsidised goods abroad than to trade at home, so such a subsidy will raise the prices of exported goods in the domestic market (Krugman Paul R., 2012).

At the beginning of the second section of this paper, it was shown that the introduction of certain government measures to regulate international trade, such as subsidies, is unlikely to have a positive welfare impact. On the contrary, it is more likely that the implementation of subsidies will worsen the terms of trade and reduce domestic welfare. But do all subsidies have a negative impact on welfare? In some cases, instruments of foreign trade policy such as subsidies or economic and commercial diplomacy can be effective in dealing with economic externalities and market failures – the situation where the free market, for some reason, cannot produce an efficient allocation of goods and services and therefore cannot achieve economic efficiency (Stiglitz Joseph E., 1989). Market failures tend to occur in developed market economies. However, market failures are more likely to occur in developing parts of the world. All types of developing economies suffer from a wide range of market failures, including imperfect markets and incomplete information. As Greenwald and Stiglitz once pointed out, in the framework of the Pareto optimum, the imperfect information environment distorts economic efficiency (Greenwald Bruce C. and Stiglitz Joseph E., 1986). Market failures are often the result of extremely weak legal and institutional foundations (Todaro Michael P. and Smith Stephen C., 2014). Inadequate legal frameworks often fail to ensure contract enforcement and property rights. Information on factors of production and goods is limited and expensive to obtain. These imperfections are often a barrier to entry for foreign firms. Such market imperfections theoretically justify interventionist policies (including economic and trade diplomacy) and, according to some economists, governments can improve economic efficiency by mitigating the negative effects of market failures (Krueger Anne O., 1990; Wright Victor, 2009; Gil-Pareja Salvador, Llorca Rafael and Serrano José A. Martínez, 2008). Alexander and Warwick, for example, provide an economic justification for government intervention in the area of export

promotion, arguing that asymmetric information, productivity spillovers and economies of scale provide the rationale (Alexander Chris and Warwick Ken, 2007).

Barriers such as local preferences, foreign legislation, cultural and linguistic differences are also costly and time-consuming (Volpe Martincus Christian and Carballo Jerónimo, 2010), thus providing another explanation in favour of trade promotion. In order to trade abroad, exporters face a wide range of barriers, including internal resource constraints, procedural barriers, exogenous barriers, and so forth (Ramaswami S. N. and Yang Y., 1990). Lack of knowledge of the competitive environment, the problem of transferring funds and less developed distribution networks, especially in less developed countries, are also relevant. The extent and number of these constraints vary according to the level of development of the target market that the exporter is trying to penetrate. Underdeveloped markets often have a large number of informational and exogenous barriers, where macro and micro economic diplomacy can be a useful tool to bridge the information gap. However, trade relations within advanced economies face fewer trade barriers and require less export assistance (Veenstra van Marie-Lise E. H., 2010). Particularly for less developed economies, the information asymmetries created by imperfect markets can be replaced by government mechanisms that promote trade through the provision of information by government agents. Foreign representations, including embassy networks, consulates, export promotion agencies or chambers of commerce, are often one of the main channels for domestic firms to succeed abroad. A complex approach to export promotion is important here. Trade promotion through economic and commercial diplomacy is not complete and needs more general facilitation through a comprehensive export policy. Foreign representations often provide only a specific form of support in the early stages of establishing business relations, which may be followed by an increase in mutual trade volumes (Afman E. R. and Maurel M., 2010). Often, government export promotion measures can be useful when some potential exporters have already been selected and their credibility can be compared to the highly competitive environment of international markets. According to Ruël, firms rely on state services such as the provision of commercial information, support and promotion of firms during formal and informal negotiations (Ruël Huub, 2013). Foreign representative offices have direct access to large companies; they are funded by the state and often attract public attention at a relatively low cost.

4. Literature Review

The domestic literature background on the current issue, except for a few attempts (Ondrejkovič Dávid, 2013; Raneta Leonid and Kunychka Mykhaylo, 2015), is quite limited; therefore, the conducted research is mainly based on relevant studies of foreign authors. Large-scale studies on the rationality of the implementation of economic and commercial diplomacy tools and their effectiveness in trade and investment promotion have been conducted mainly by the International Institute of Social Studies in The Hague, or the Clingendael Institute of International Relations. However, there is a relatively limited number of studies that aim to examine the issue of trade facilitation on the basis of a single state via actors of economic and commercial diplomacy, especially the study on the former USSR republics. For example, Afman and Maurel have conducted a rather rare study on the effectiveness of economic diplomacy in transitive economies (Afman E. R. and Maurel M.). Only a small number of studies have focused on a single economy. For example, Head and Ries, Kang and Gil-Pareya examine the effectiveness of different economic diplomacy bodies in Canada, South Korea and Spain, respectively (Head Keith and John Ries, 2010; Kang Kichun, 2011; Gil-Pareja Salvador, Llorca Rafael and Serrano José A. Martínez, 2008). In the field of export promotion by the Ukrainian foreign service, the emphasis should be placed on the expansion of embassy staff, although the impact of the daily activities of economic diplomats is closely related to the financial coverage of foreign missions (Raneta Leonid and Kunychka Mykhaylo, 2015).

Tinbergen is considered to be one of the first studies to look at diplomatic activity and trade flows (Tinbergen Jan, 1962). His contribution was based on a gravity model of trade that included dummy variables for the colonial ties of the target countries. Tinbergen showed that there was a positive relationship between diplomatic activity and trade, and was therefore criticised for controlling for a limited number of dummy variables, which could have distorted the results of the gravity model implemented. One of the first contributions to the importance of economic diplomacy in stimulating trade was presented by Rose (Rose Andrew K., 2007). Rose systematically examined the relationship between the presence of embassies and the average of export flows for the period 2002–2003. His dataset included 22 exporting countries and 200 export destinations. Within the framework of the gravity model, Rose found a positive result indicating a 6-10% increase in export flows after the establishment of an additional embassy in the host country. Van Bergeijk also presented a wide range of research

on the effectiveness of economic diplomacy and export promotion (Bergeijk Peter A. G. van, 1994). He distinguishes between positive and negative political events in diplomatic relations, thus indicating a positive effect of diplomatic activities on trade. Lederman, Olarreaga and Payton report a useful study in the area of investigating the effect of official state representation on trade flows (Lederman Daniel, Olarreaga Marcelo and Payton Lucy, 2010). The authors' empirical results, based on a global survey of national export promotion agencies in 104 countries, show a statistically significant positive impact on trade flows. Each dollar spent on export promotion increases the volume of export flows by 40 USD for the median agency. In the later study, the results also suggest a similar increase in exports after increasing the budget of export promotion agencies (Lederman Daniel, Olarreaga Marcelo and Payton Lucy, 2010). It should be noted, however, that these results are somewhat heterogeneous with respect to different geographical regions, levels of economic development and diplomatic instruments chosen. The crucial difference in the studies conducted on the effectiveness of economic and trade diplomacy is the variation in the targeted foreign representations. Lederman, Olarreaga and Payton or Volpe Martincus and Carballo, for example, use export promotion agencies as an instrument of economic diplomacy (Volpe Martincus Christian and Carballo Jerónimo, 2010; Lederman Daniel, Olarreaga Marcelo and Payton Lucy, 2010).

Another study on the activities of foreign representative offices and their impact on trade has been carried out by Afman and Maurel. The work of these authors follows the methodology of Rose (Rose Andrew K., 2007) and thus examines trade flows between advanced countries, represented by the OECD, and transition economies, including post-Soviet states (Afman E. R. and Maurel M., 2010). An important aspect of the research is the exclusion of intra-group trade flows from the analysis. Afman and Maurel justify the acceptance of such a dataset by emphasising the emergence of new export opportunities for former planned economies, as trade promotion within the OECD has a well-established diplomatic tradition and long experience in promoting exports. Yakop and Van Bergeijk address a similar issue, examining bilateral trade flows between 63 countries in 2006. Yakop and van Bergeijk consider not only diplomatic and consular support for export flows, but also the influence of embassies on import facilitation. Based on the extended gravity equation, these authors find a positive effect of targeted instruments on bilateral trade flows of 6-16%, depending on different specifications of the analysis (Yakop Mina and Bergeijk van Peter A. G., 2011). They also point to the relevance of economic diplomacy depending on the income level of the trading countries. Yakop and Van Bergeijk conclude that economic diplomacy is a more relevant trade facilitation tool for developing countries. Within the matrix of advanced countries' bilateral trade flows, the results indicate a moderate effect of the chosen economic diplomacy instruments (Yakop Mina and Bergeijk van Peter A. G., 2011).

The work of van Veenstra, Yakop and van Bergeijk is of particular scholarly interest for the purposes of this paper. An important empirical advance has been made by examining the synergy effect of economic and trade diplomacy in a comprehensive multinational framework. The study of 1242 bilateral trade flows of 36 developed and developing countries points to a positive impact of embassies and consulates on trade. In the overall framework of 36 countries, an additional 10% of embassies and consulates seems to have a positive effect of 0.5-0.9% on trade (Veenstra van Marie-Lise E. H., 2010). An important conclusion is the empirical proof of the theoretical assumption that the instruments of economic and commercial diplomacy are an effective means of trade facilitation for developing countries, and therefore a less efficient tool for promoting business activities within advanced economies. The appropriateness of using the tools of economic diplomacy in relation to the level of development of the home country is justified by the following theoretical concepts. The asymmetry in the distribution of knowledge among countries is greatest between developed and developing countries (Yakop Mina and Bergeijk van Peter A. G., 2011; Volpe Martincus Christian and Carballo Jerónimo, 2010). Based on this statement, it can be assumed that the creation of public awareness is more relevant in mutual relations between developed and developing countries. Political and economic institutions are less developed outside the rich countries, which implies greater government involvement in the international economic relations of less developed economies.

Another assertion is related to the interaction of companies within a group of developed economies, where the activities of economic and commercial diplomacy are less essential, since transparent and easily accessible information related to business affairs prevails in these countries. On the contrary, the lack of knowledge of the competitive environment, the problem of transferring funds and the issue of less developed distribution are characteristic of developing countries (Ramaswami S. N. and Yang Y., 1990). This element of market failure leaves room for the implementation of economic and trade diplomacy instruments, thus indicating their relevance for less developed countries.

Most of the studies mentioned above present similar results indicating a positive and statistically significant effect of economic and commercial diplomacy on the development of international economic relations and, in particular, on the promotion of trade flows. The main difference is related to different bilateral trade matrices and exogenous variables included in the augmented gravity equation. The overall results are quite heterogeneous, which can be explained by limited data sets, different types of observations and instruments of economic and commercial diplomacy. More recent contributions distinguish between two main types of instruments, including official representations abroad and specific trade agencies. For example, Rose, Afman and Maurel, Volpe Martincus and Carballo or Yakop and van Bergeijk examine the impact of embassies and consulates (Rose Andrew K., 2007; Afman E. R. and Maurel M., 2010; Yakop Mina and Bergeijk van Peter A. G., 2011). On the contrary, Lederman et al. or Kang focus on the relationship between trade flows and export promotion agencies (Lederman Daniel, Olarreaga Marcelo and Payton Lucy, 2010; Kang Kichun, 2011). Despite the differences in the targeted instruments of economic and trade diplomacy, the above authors find a positive and statistically significant effect on trade flows. A complex meta-analysis with more than 30 relevant studies on the impact of economic diplomacy on trade can be found in Moons and van Bergeijk (Moons Selwyn J. V. and Bergeijk van Peter A. G., 2017). A summary of recent publications on the topic of trade promotion using the tools of economic and commercial diplomacy is available in Table 1.

5. Theoretical Model and Quantitative Methodology

The gravity model is one of the most widely used theoretical workhorses of international trade analysis, used to explain bilateral trade flows. In its simplified form, the gravity equation represents the relationship between trade volumes and "gravity" factors such as the economic size of the trading partner and the geographical distance between two trading partners, so that an increase in the economic size of the trading partner leads to a proportional increase in trade flows, and at the same time an increase in the geographical distance between the partners has a negative effect on the volume of trade flows. The gravity model has been known since the second half of the 20th century, when it was introduced by Jan Tinbergen. The logic behind the gravity model of trade is developed on the basis of Newton's theory of gravity, as planets are attracted to each other in proportion to their size and proximity (Tinbergen Jan, 1962). Countries also trade in proportion to their economic mass and proximity (Feenstra Robert C., 2004). It has been suggested that well-known models of international trade, such as the Ricardian or Heckscher-Ohlin models, which are based on differences in technology between countries or differences in factor endowments, do not provide a sufficient theoretical basis for the concept of gravity. A seminal paper by Anderson is regarded as one of the most important attempts to provide a theoretical justification for the gravity model in the economic literature (Anderson James E. and van Wincoop Eric, 2003). Anderson's theoretical explanation is based on the assumption that all traded goods are differentiated by country of origin and that preferences are defined by all differentiated goods (Bacchetta Marc Beverelli et al., 2012). This implicitly implies that economies with greater economic mass trade more. Geographical distance has been explained by modelling transport costs within the theoretical framework of Samuelson's "iceberg" costs, so that higher transport expenditures reduce the volume of trade. Other prominent works on the theoretical foundations of the gravity model were introduced by Bergstrand or Deardorff (Bergstrand Jeffrey H., 1985; Deardorff Alan, 1998). Anderson and van Wincoop, for example, included consumer preference patterns based on constant elasticity of substitution and considered consumers who try to maximise their utility by consuming a wide range of products (Anderson James E. and van Wincoop Eric, 2003). Anderson and Wincoop's specific gravity equation is considered to be quite precise, as it includes the multilateral trade barrier terms.

To achieve the objectives of this research, the log-linear extended version of the gravity equation is used, based on its simple specification:

$$lnT_{ij} = a + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnD_{ij} + \varepsilon_{ij}, \quad (1)$$

where T_{ij} denotes trade flows of home country i to its trading partner j, Y_i and Y_j represent the economic masses or GDP of home country and its partner respectively. D denotes geographical distance between exporting and importing countries that is traditionally used as proxy for trade costs, ε equals to error term and β represents the estimated parameter. Following the logic of gravity model of trade, it is assumed that parameters β_1 and β_2 will be positive as higher GDP of trading partner predict a higher export. The reason could be the developed transport infrastructure, including roads, airports, ports and other infrastructure hubs. Conversely, the parameter β_2 will be negative, as trade decreases with increasing physical distance. The simple procedure for estimating the gravity equation is to take the natural logarithms of all variables and obtain a log-linear equation. The log-linear equation allows the estimation to be based on the ordinary least squares method. Unlike nonlinear estimation methods,

this method is clearly sufficient for the purposes of this paper. This specification allows a direct interpretation of the estimated parameters, since each parameter can be interpreted as an elasticity (Bacchetta Marc Beverelli et al., 2012).

In equation (1), distance is used as a proxy for transport costs and perishability for particulate goods. The vast majority of literature on the gravity model notes that long distance is usually associated with synchronisation costs – lower geographical distance reduces the time and cost of inputs needed for industrial products. Communication costs are also part of the distance issue. It is easier for managers and customers to conduct business and exchange more information in face-to-face meetings. It is assumed that it is more efficient to deal through modern communication devices. Distance can also be associated with the cost of searching for potential trade opportunities. Greater geographical distance is often associated with a greater cultural gap, which can lead to misunderstandings during business meetings and communication. Frequently, the issue of distance in gravity equations is also expressed by a common language or former colonial relations. Empirical literature suggests that trading partners who share a language and a common historical past tend to trade intensively. It is natural that members of the Commonwealth of Nations will trade more with each other or with former Soviet countries that used to have close economic ties. Some of the empirical literature includes adjacency, which is represented by a common border. Usually, it is not clear why adjacency is included in gravity equations, as distance is already represented by geographical proximity, but often distances between the economic centres of trading partners are measured, which can be significant, and the issue of border trade is often neglected. To control for adjacency, the issue of a common border, represented by a dummy variable, is often used (Rose, 2007).

Another binary variable is also controlled for in the gravity equation. To capture transport and time costs in addition to geographical distance, the standard gravity model is often extended to include parameters capturing the insular and landlocked nature of the trading partner, reflecting the hypothesis that the costs of trading with an island or landlocked state increase. Common language and common colonial relations are added to capture communication costs. Presumably, trading partners will be more inclined to trade with countries where there is a similar business culture and known business practices. It is much easier to establish business contacts and trade in countries with the same language. For this reason, enterprises are more likely to establish business contacts with suppliers or customers in countries where the business environment is familiar. Data on customs unions and free trade agreements are often added to the model (Rose Andrew K., 2007; Yakop Mina and Bergeijk van Peter A. G., 2011; Gil-Pareja Salvador, Llorca Rafael and Serrano José A. Martínez, 2008).

Current research focuses on estimating the impact of economic diplomacy instruments on the bilateral trade of the target country, and the application of the gravity equation of trade seems to be the best quantitative approach. The choice of the gravity model is well founded by the theoretical and empirical literature mentioned in the previous section of the paper. The extended gravity equation has been repeatedly applied in the scientific papers investigating the relationship between economic diplomacy and trade flows (Rose Andrew K., 2007; Afman E. R. and Maurel M., 2010; Kang Kichun, 2011; Yakop Mina and Bergeijk van Peter A. G., 2011). The simplicity of the model is its advantage, as it includes only a limited number of variables, which facilitates the conduct of econometric analysis (Bergeijk Peter A.G. van, 1994). The applied model allows the inclusion of variables of different nature, including geographical distance, economic power of trading partners and political issues. Despite the overwhelming acceptance of the gravity model in the theoretical and empirical literature, it is necessary to point out some limitations of the applied model. Firstly, the test data are only used for a specific time series and cross-sectional dataset. Only one gravity equation is used to illustrate the total volume of trade, irrespective of the evolution of the terms of trade over time. The heterogeneous nature of bilateral trade relations does not allow to reflect all possible relations as they are not captured in the overall analysis. The disadvantage of the applied model is the quantitative nature of the model, which is not able to take into account the qualitative characteristics of some of the parameters under consideration. In the case of the present study, the model is not able to explain the knowledge and skills of individual diplomatic or consular representatives, such as intuition, talent, education, intellect and diplomatic experience. These unquantifiable parameters are considered as part of a log-normally distributed error term.

To examine the relationship between exports and other variables, including standard gravity parameters, multidimensional distance characteristics and instruments of economic diplomacy, an extended log-linear gravity equation defined below is used. The description of each variable and the parameter estimates are presented in Table 2 u and j denote the country of origin (Ukraine) and destination of the export flows. t denotes the period under study.

$$ln(T_{ujt}) = \beta_0 + \beta_1 ln(GDP_{ut}) + \beta_2 ln(GDP_{jt}) + \\ + \beta_3 ln(D_{uj}) + \beta_4 ln(Pop_{ut}) + \beta_5 ln(Pop_{jt}) + \\ + \beta_6 ComLang_{uj} + \beta_7 Landl_{uj} + \beta_8 Island_{uj} + \\ + \beta_9 Border_{uj} + \beta_{10} ln(Area_u * Area_j) + \beta_{11} ComCol_{uj} + \\ + \beta_{12} RTAu_{jt} + \beta_{13} StaffEmb_{uj} + \beta_{14} StaffGenCon_{uj} + \\ + \beta_{15} HonCon_{uj} + e_{uj}, \quad (2)$$

6. Data Description and Methodology

In order to test the hypothesis that a particular instrument of Ukrainian economic diplomacy is effective in promoting export flows to developing countries and less effective in facilitating trade with advanced countries, the two datasets were analysed. There are 133 middle- and low-income countries and 66 high-income countries. For each trading partner, 12 years of data were selected. Thus, the applied analysis is based on panel data with 199 cross-sectional units and 12 time-series units. The 12-year period was chosen according to the main institutional and political constraints. The lower limit is analysed according to the institutional support of the network of foreign offices abroad, which was completely built up until the year 2007, while the upper limit 2018 is defined by the availability of the required data.

Export statistics were obtained from the United Nations Council on Trade and Development (UNCTAD) and cover the period 2007–2018. Export flows from Ukraine to its trading partners are expressed in thousands of USD. Data on GDP per capita and population of the target country and its export destinations were also obtained from the UNCTAD statistical database. Population data are expressed in thousands and GDP per capita in USD at current prices and exchange rates. Data for variables such as geographical distance, land area, common border, common language and other dummy variables were obtained from the Centre d'Études Prospectives et d'Informations Internationales (CEPII). Regarding the distance between the target country and its trading partner, distances based on the calculations of the great circle formula were used (Mayer Thiery and Zignago Soledad, 2012). In this paper, the latitude and longitude of the main cities or agglomerations by population are used. Russian was chosen as the common language. Despite the unofficial status of the Russian language in Ukraine, almost half of the population speaks Russian in their daily lives. The information system on regional trade agreements was used to check Ukraine's participation in regional trade agreements with its export destinations. Data on regional trade agreements have been added depending on their validity in a particular year under study. The definition and description of the data used can be found in Table 2.

Data on the number of diplomatic and consular staff and the number of honorary consulates were obtained from the official website of the Ministry of Foreign Affairs and foreign missions abroad. All staff numbers were collected through a manual and time-consuming process and cover the years 2013 and 2018. The lack of retrospective data makes it impossible to monitor the number of diplomatic and consular staff over the entire 12-year period. Only staff with diplomatic rank, such as ambassador, consul general, counsellor, secretary or attaché, were included in the analysis. Despite the fact that an embassy represents the political and economic interests of a country in several countries while being located in only one host country, this study only examines the number of resident embassies. A similar principle has been applied to general and honorary consulates. For honorary consulates, only the number of offices was included in the analysis, as the MFA of Ukraine does not provide staff data. Permanent missions to international organisations or quasi-diplomatic missions (Pajtinka Erik, 2019), which may have a negative impact on parameter estimates, were not included in this analysis.

A particular limitation of the analysis is the limited data, which does not allow us to differentiate the impact of foreign missions on trade facilitation, so this feature is to some extent an imprecision of the applied quantitative methodology. Similarly to van Bergeijk, Groot and Yakop, the authors distinguish between several types of foreign representations in the host country, namely embassies, consulates and honorary consulates. According to some prominent works on the effectiveness of economic diplomacy instruments, the role of honorary consulates is often neglected. For instance, van Bergeijk, Groot and Yakop define honorary consulates as "unimportant" foreign representation arguing, "*They do not perform their tasks to earn a living, as the career consuls do, but rather fulfill their consular functions alongside their daily work.*" (Bergeijk, Peter A.G. van, Henri L. F. Groot and Mina Yakop, 2011) Honorary consulates, like other consular missions, perform their functions in the host countries in accordance with the Vienna Convention on Consular Relations and contribute to the development of economic relations between the home and host countries. Some authors exclude honorary consulates from their analysis, but this assessment takes into account the number of honorary consulates in host countries, as honorary consuls often become important figures in the economic environment of the host country, even if they are self-financed and independent of the state budget (Rose Andrew K., 2007; Afman E. R. and Maurel M., 2010; Veenstra van Marie-Lise E.H., 2010). In this analysis, the control of consulates, and then honorary consulates, can be justified by their

important position in the host country. The consul general, as head of the consulate general, is a high diplomatic representative and also contributes to the development of economic relations.

In order to investigate the effectiveness of economic diplomacy instruments of targeted countries, income groups of host countries were created. All export destinations were divided into groups of countries according to their gross national income per capita. Data on GNI per capita at current prices and current exchange rates were obtained from the World Development Indicators database. These groups include low-income countries with GNI per capita below 1045 USD, middle-income countries with GNI per capita between 1045 and 12746 USD and high-income countries with GNI per capita above 12746 USD. The target country is classified as a middle-income country, while the data used correspond to the 2013 World Bank classification.

7. Comparison of Economic Diplomacy Effectiveness: High vs Low and Middle-income Country Groups

The income level of the host country is one of the key determinants of the effectiveness of the home country's economic diplomacy (Veenstra, Yakop and van Bergeijk 2010; Yakop, van Bergeijk 2011). Hidden barriers to trade, such as a lack of trust, cultural differences, inefficient management of public affairs or market failures, are more relevant for less developed countries with lower incomes, thus creating a space for economic diplomacy. In this case, an essential role of economic diplomacy is to compensate for the information deficit by providing commercial information, technical support, assisting companies in negotiations and establishing business contacts. As a result, economic diplomacy is expected to be more effective in low- and middle-income host countries than in high-income developed countries.

To test the hypothesis that economic diplomacy is an effective government tool to promote export flows in low- and middle-income countries and not in high income countries, the extended gravity model of trade (equation 2) was applied to each of the datasets. The first set includes high-income export destinations, while the second set consists of low- and middle-income trading partners. The results of the regression analysis are summarised in Tables 3 and 4.

The results of the regression analysis show that the R-squares for the models are 0.75 and 0.69 respectively (see Table 3 and Table 4), indicating that the regression function explains about 70% of the variability of exports in the linear models examined. The remainder represents unexplained variability and the effect of unspecified factors. The effect of each explanatory variable varies according to the data sets or income groups examined. There is a significant difference in the β-coefficients across income groups. In the high-income group, 7 negative coefficients appeared, while in the middle and low-income countries the number of negative coefficients was 6. With regard to the objectives of this study, the staff of the Consulates General seemed to be of interest, since β-coefficients have a negative effect on Ukrainian export flows.

During the period 2007–2018, 792 export flows to high-income countries were recorded, while up to 1596 flows were observed in the low- and middle-income group. However, the difference in the number of export flows does not pose a serious problem for the estimation of the target coefficients, as the number of flows available is still sufficient to verify the effectiveness of economic diplomacy in promoting exports.

In order to test the hypothesis that Ukrainian economic diplomacy is effective in promoting exports to low- and middle-income countries and ineffective in promoting exports to high-income countries, a comparative analysis of the effectiveness of diplomatic actors was conducted.

The generated log-linear gravity equation suffers from heteroskedasticity, the distribution-free Wald test for heteroskedasticity showed that heteroskedasticity is present. There is a large variability in the trade flow data (dependent variable), not only because of different trade priorities, but also because of the objective bias imposed by the size of the economy. To deal with this, the authors use panel econometric methods, which could be more informative and allow more degrees of freedom, increasing the efficiency of the estimators. The Breusch-Pagan test statistic shows that the p-value is low and it counts against the null hypothesis that the pooled OLS model is appropriate in favour of the random effects alternative.

The results for the panel data with random effects model (see Table 3) show a low significance of the targeted independent variables (*StaffEmb, StaffGenCon, HonCons*). This result is in line with the above-mentioned assumption that economic diplomacy is less effective with developed countries. The Hausman test statistic showed a high p-value in favour of the null hypothesis that the random effects model is consistent and not in favour of the fixed effects model. The Hausman test did not reject the null hypothesis and random effects is the correct procedure. The authors add the results of the country fixed effects model for comparison (see Table 3).

As regards the interpretation of the coefficients, it can be said with a high degree of confidence that the GDP of Ukraine and the population of the partner country have a strong positive impact on exports. The larger the population (l_Pop_j) of the

trading partner, the higher the export flows. Distance has a negative coefficient, which is in line with expectations: as distance increases (*l_D*), trade flows decrease. Each percentage point change in GDP per capita is associated with a 1.3% increase in exports to high-income countries (taking into account the error from 1.073 to 1.5269% change). Other variables did not show any relevant significance for the group of high-income countries.

The group of low- and middle-income countries was of particular interest to the present study because the income level of the host country is one of the key determinants of the effectiveness of the home country's economic diplomacy. Developed economies with highly competitive markets are subject to fewer market imperfections that could be addressed by the work of the diplomatic mission.

The group of low- and middle-income countries was of interest for the present study because the income level of the host country is one of the crucial determinants of the effectiveness of the home country's economic diplomacy. Table 4 shows that the pooled OLS model showed statistical significance for 11 out of 15 regressors. The model consisted of 1591 observations with 133 cross-sectional units, but since it also suffers from heteroskedasticity as in the case of high-income countries, the distribution-free Wald test for heteroskedasticity indicated the presence of heteroskedasticity. The Breusch-Pagan test statistic for low- and middle-income countries showed a low p-value and it counts against the null hypothesis that the pooled OLS model is appropriate in favour of the random effects alternative.

The random effects model was used. As shown in Table 4, out of 15 explanatory variables, 8 showed statistically significant results. The Hausman test statistic showed a high p-value, which is in favour of the null hypothesis that the random effects model is consistent, and not in favour of the fixed effects. The Hausman test did not reject the null and the random effect is the correct procedure.

Independent variables such as the level of GDP per capita and the population of the trading partner (GDP_{upc}, GDP_{jpc}, Pop_j) have a strong positive elasticity with a statistically significant result. Such variables as Distance, Landlocked, and Island with statistically significant negative elasticity turned out to be as expected in the assumptions. An exception was the variable Border, which expected a positive elasticity, but the result showed a negative significant result, which could be explained by a massive shift of Ukraine's export flows from neighbouring countries to world markets. No serious significance was reported for changes in the population of Ukraine (*Popu*), common language (*ComLang*) in the current global environment is significant for Ukraine, geographical area (*AreauAreaj*), common colony (*ComCol*) and regional trade agreement (*RTA*) proved to be non-significant explanatory variables.

The main interest of the study is economic diplomacy, and in the case of low- and middle-income countries, embassy staff is found to be statistically significant. It was found that each diplomatic staff member in low- and middle-income countries is associated with a change in exports from 5.27 to 12.3%, taking into account the standard error of 0.03502. Even in the country fixed effects model, diplomatic personnel showed statistically significant results, which means that this relationship is also robust at the country level. In many cases where there is no diplomatic representation, the change from zero to one would be identical to the establishment of an embassy.

The other two regressors of economic diplomacy, the staff of general consulates and honorary consulates (*StaffGenCon* and *HonCons*), turned out to be statistically insignificant. This was in line with the expectation that these missions don't prioritise economic diplomacy.

The discussion of these results could be based on the fact that it can be argued that trade determines the intensity of diplomatic relations and that it is the main factor and vice versa. In recent history, Ukraine has experienced a great drama and has made a turn in its foreign policy priorities, which can be traced back to the logic of the unfolding of history. Until 2014, the Russian Federation was one of Ukraine's main export partners (before 2014, exports amounted to 15-20 billion USD per year). After the annexation of the Crimean Peninsula and the war in Donbass, it is possible to argue that the diplomatic mission immediately turned into a formality. In the words of the Minister of Foreign Affairs, Pavel Klimkin: "*In fact, we don't have diplomatic relations, it's a formality, because our diplomats in Russia by definition cannot carry out diplomatic activities in an aggressor country*." (RBC, 2018) In recent years, the value of trade with Russia has been steadily declining, from $15 billion in 2013 to $3.6 billion in 2018. It is clear that the diplomatic service has changed its position in response to the crisis. As a result, Ukraine's exports to Russia have fallen drastically by more than 70%. The crisis between Ukraine and Russia outweighed all other factors and led to a decline in exports and a halt in diplomatic activity. The model in this paper shows that from an economic diplomacy perspective, the group of low- and middle-income countries is highly correlated with exports. These findings can help policy makers in Ukraine to better adjust their export promotion strategy to achieve the best possible outcome in trade relations.

8. Conclusions

This paper examines the impact of economic diplomacy on Ukrainian export flows. It uses a stacked time series panel with 199 cross sections and a time series of 12 years (from 2007 to 2018), resulting in a total of 2383 observations. The applied gravity model of trade allows to control for three different types of parameters: economic variables (GDP and trade agreements), non-economic parameters (common language, colonial background, geographical parameters such as distance, common border or landlockedness) and parameters assessing the added value of diplomatic representations such as embassies, general consulates and honorary consulates. In addition, to achieve the goal of the main hypothesis, two groups of countries were identified. The first group consists of high-income countries and the second of low- and middle-income countries. This division is necessary to understand the relevance of foreign missions in relation to income levels.

The added value of the paper is that it examines the impact of different foreign representations on the export flows of transitive states. The model used shows mixed but at the same time expected results. The results show that there is no significant relationship between diplomatic personnel and exports in the group of high-income countries. This is consistent with the hypothesis that economic diplomacy is more effective in the case of developing countries and less effective in highly competitive developed economies.

On the other hand, the group of low- and middle-income countries showed a statistically significant result. The coefficient of elasticity for embassy staff is positive, suggesting that each diplomatic staff member leads to a 5.27-12.3% increase in exports, although in many cases this change of one unit would imply the establishment of an embassy if one did not exist. General consulates and honorary consulates proved to be statistically insignificant, both for high-income countries and for low and middle-income countries.

The hypothesis that Ukrainian economic diplomacy is effective in promoting exports to developing countries and less effective in facilitating trade with advanced countries is confirmed by the statistical results for the two different groups of countries. We can argue about the scale of the impact, but conceptually, there is a clear difference in effectiveness. Although a positive and statistically significant result was found for the group of low- and middle-income countries, the result was not statistically significant for the group of high-income countries.

The increase in the number of diplomats should not be taken blindly as a statistical indicator, but should also be considered in the light of an important qualitative condition (the professionalism of diplomats and their competence and ability to fulfil their agenda). At the same time, the heterogeneity of export markets should not be forgotten. An increase in export-promoting activities in key export destinations can produce positive results that outweigh the potential costs. In this context, there are opportunities for further research that could include the budgetary side of individual embassies as well as their strategic priorities. However, the financing aspect of individual embassies was not elaborated in this research due to the lack of relevant data on the internal budget of the Ministry of Foreign Affairs of Ukraine.

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Annexes

Table 1

Recent publications on the relevance of economic diplomacy in promoting international trade

Author	Year of publication	Targeted region	Diplomatic instruments	Investigated period	Theoretical model
Rose	2007	Developed and emerging countries	Embassies and consulates	2002–2003	Gravity model
Segura-Cayuela and Vilarrubia	2008	Developed and developing countries	Embassies and consulates	1999	Gravity model
Afman and Maurel	2010	OECD and transition economies	Embassies and consulates	1995, 2000, 2005	Gravity model
Yakop and van Bergeijk	2011	OECD and developing countries	Embassies and consulates	2006	Gravity model
Kang	2011	South Korea	Export promotion office	1994–2004	Gravity model
Van Veenstra et al.	2010	OECD and developing countries	Embassies, consulates and EPA	2006	Gravity model
Gil-Pareya et al.	2011	Spain	Embassies, consulates and export promotion offices	1995–2010	Gravity model
Ondrejkovic	2013	France	Embassies and consulates	2007–-2011	Gravity model
Raneta and Kunychka	2015	Ukraine	Embassies, consulates and honorary consulates	2007–2013	Gravity model

Source: processed and edited by the authors on the basis of Moons and van Bergeijk study (Moons Selwyn J. V. and Bergeijk van Peter A. G., 2017)

Table 2
Definition of variables in the extended equation of gravity

No.	Variable	Description	Measurement unit	Source	Assumption of parameter estimates
1.	T_{uj}	Ukrainian exports to trading partner	Thousands USD	UNCTAD	-
2.	GDP_u	GDP per capita in Ukraine	Thousand USD, current prices	UNCTAD	$\beta_1 > 0$
3.	GDP_j	GDP per capita in export destination	USD, current prices	UNCTAD	$\beta_2 > 0$
4.	D_{uj}	Geographical distance between Ukraine and export destination	Kilometers	CEPII	$\beta_3 < 0$
5.	Pop_u	Population	Thousands	UNCTAD	$\beta_4 > 0$
6.	Pop_j	Population	Thousands	UNCTAD	$\beta_5 > 0$
7.	$ComLang_{uj}$	Common language	Binary	CEPII	$\beta_6 > 0$
8.	$Landl_{uj}$	Landlocked character of trading partner	Binary	CEPII	$\beta_7 < 0$
9.	$Island_{uj}$	Island character of trading partner	Binary	CEPII	$\beta_8 < 0$
10.	$Border_{uj}$	Represents the variable if trading partner have a common border with Ukraine	Binary	CEPII	$\beta_9 > 0$
11.	$Areau*Area_j$	The land area of Ukraine and its trading partner	Square kilometers	CEPII	$\beta_{10} < 0$
12.	$ComCol_{uj}$	Represents the variable if Ukraine and its trading partner were the one political entity in the past	Binary	CEPII	$\beta_{11} > 0$
13.	RTA_{uj}	Represents the variable if Ukraine has a regional trade agreement with its trading partner	Binary	WTO	$\beta_{12} > 0$
14.	$StaffEmb_{uj}$	Number of diplomatic staff in host country	Number of persons	MFA of Ukraine	$\beta_{13} > 0$
15.	$StaffGenCon_{uj}$	Number of consular staff in host country	Number of persons	MFA of Ukraine	$\beta_{14} > 0$
16.	$HonCon_{uj}$	Number of honorary consulates in host country	Number of consular units	MFA of Ukraine	$\beta_{15} > 0$

Source: processed by the authors

Table 3
Regression output (high-income countries)
Using 792 observations, included 66 cross-sectional units, time-series length = 12
Dependent variable: l_Exort1

	Pooled OLS		Random effects estimator		Fixed effects	
	Coefficient	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*
const	−0,941043	0,9862	−6,72694	0,8422	18,2155	0,6653
l_GDPupc	1,31092	0,0009	1,30071	1,44e-08 ***	1,30285	1,97e-08 ***
l_GDPjpc	−0,426144	0,0059	−0,303722	0,2453	−0,341794	0,2688
l_D	−1,85401	<0,0001	−1,98540	7,11e-07 ***		
l_Popu	1,22326	0,8128	1,70393	0,5846	−1,28421	0,7196
l_Popj	1,24845	<0,0001	1,21226	3,18e-010 ***	−0,284802	0,712
ComLang	−0,612656	0,68	−2,58066	0,4615		
Landl	−0,812278	0,0147	−0,896658	0,3893		
Island	0,337993	0,1293	0,299425	0,6716		
Border	1,02398	0,1629	1,21778	0,5921		
l_AreauAreaj	−0,162324	<0,0001	−0,118131	0,3384		
ComCol	−0,0295325	0,9477	−0,00765914	0,9956		
RTA	0,170735	0,741	0,0533623	0,8985	0,0686128	0,8723
StaffEmb	0,0583679	0,0334	0,00158779	0,9663	−0,000923709	0,9825
StaffGenCon	−0,0688582	0,1271	0,0256837	0,5917	0,0335525	0,5064
HonCons	0,114756	0,1624	0,108475	0,3634	0,107058	0,4557
R^2	0,753231					
P-value(F)	9,9e-224					

Source: compiled by the authors based on the data collected

Table 4

Regression output (middle- and low-income countries)

Using 1591 observations, included 133 cross-sectional units, time-series length: minimum 7, maximum 12

Dependent variable: l_Export1

	Pooled OLS		Random effects estimator		Fixed effects estimator	
	Coefficient	*p-value*	*Coefficient*	*p-value*	*Coefficient*	*p-value*
const	10,4923	0,7931	24,174	0,4164	46,667	0,1792
l_GDPupc	0,964122	0,0008	0,971732	1,34e-07 ***	0,967545	1,85e-07 ***
l_GDPjpc	0,66687	<0,0001	0,574332	6,62e-06 ***	0,479798	0,0078 ***
l_D	−1,79786	<0,0001	−1,75234	2,11e-08 ***		
l_Popu	−0,835842	0,8261	−2,22944	0,4214	−4,92659	0,1143
l_Popj	1,05298	<0,0001	0,869663	1,19e-09 ***	0,315252	0,277
ComLang	0,270626	0,5663	0,0322947	0,9809		
Landl	−1,34605	<0,0001	−1,45283	0,0009 ***		
Island	−1,02752	<0,0001	−1,04237	0,0640 *		
Border	−1,52926	0,0003	−1,93066	0,0934 *		
l_AreauAreaj	0,007658	0,8804	0,135683	0,3119		
ComCol	2,37963	0,0005	2,08879	0,1412		
RTA	0,003118	0,9959	0,41755	0,6309	0,557221	0,5703
StaffEmb	0,078102	0,0009	0,0877665	0,0123 **	0,105753	0,0253 **
StaffGenCon	−0,361199	<0,0001	−0,0366140	0,7743	0,159002	0,3314
HonCons	0,326202	<0,0001	0,1068	0,3727	−0,0110511	0,9384
R^2	0,696185					
P-value(F)	0,000000					

Source: compiled by the authors based on the data collected

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