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Impact of the Selected Predictors on Cross-Border Mergers and Acquisitions in the Industry and Service Sectors

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ABSTRACT

Since 1990s, the popularity of mergers and acquisitions and cross-border M&A has greatly increased thanks to globalization and technological development. Cross-border mergers and acquisitions are a major global phenomenon that enables businesses to create synergies for business, acquire discounted assets, create tax savings, gain access to new technologies, diversify business activities, increase competitiveness and market value. The main objective of the contribution is to identify the impact of the selected predictors on the volume of cross-border mergers and acquisitions made between the selected countries of the European area in the manufacturing and services sectors in the period 1998 to 2015. The database used for this analysis contains records of cross-border M&A carried out in the European Economic Area (EEA) and in Turkey, the data of which were taken from the Zephyr database (Bureau van Dijk, 2016). The contribution focuses on two basic attributes, the time sector and the type of sectoral relevance (services and industry). On the basis of the regression analysis, the impact of the selected predictors on cross-border mergers and acquisitions in the industry and service sectors is analysed. The results of the analysis point to the fact that entities in the surveyed sample of countries in the European area prefer investments that lead to strengthening of their market position within economies. The analysis also found that investments from European countries were centred mainly on relatively close economies that are culturally and linguistically close to each other.

INTRODUCTION

Cross-border mergers and acquisitions of companies are one of the most important phenomena of the last three decades around the world. An important factor in the growth of the importance of cross-border mergers and acquisitions is the gradual unification of the world (globalization). We can see cross-border mergers and acquisitions as one of the main forms of integration that enables business to create synergies, gain economies of scale, reduce costs, increase market power, and create a competitive edge overall (Bhagat et al., 2011; Heckova et al., 2016). Increasing volatility and the complexity of the business environment force businesses to reduce their vulnerability to adverse changes and consequently increase their market competitiveness (Ovtchinnikov, 2013). Therefore, businesses often try to grow, in particular externally, through mergers and acquisitions, as these provide faster changes and effects compared to internal growth opportunities. There are a number of motif classifications for mergers and acquisitions (Cartwright and Schoenberg, 2006). Internationalization is the process by which the company increases its participation in foreign markets and considers it a series of events that occur over time (Kanika, 2013).

Brakman et al. (2013) provide a broad view of mergers and acquisitions. They summarize the reasons for the implementation of the merger and acquisition activities of the companies and their objectives in five groups: (1) exploitation of synergies of growth opportunities, (2) managers' interest in acquisitions, (3) risk diversification, (4) strengthening market power and (5) changes in the business environment. As businesses are forced to keep up with local and foreign competitors, mergers and acquisitions as a form of investment can involve both domestic and foreign business. If a company chooses to place its products on foreign markets, it has the option of choosing between export and local production through foreign direct investment (Erel et al., 2012). If a business decides to locally produce, it can build its own green-field investment facility or acquire an existing enterprise through a cross-border merger and acquisition (Nocke and Yeaple 2007). In order for the business to profit on foreign markets, it must have a competitive advantage compared to local competitors. Otherwise, local businesses would take it out of the market (Focarelli and Pozzolo 2012).

1. METHODOLOGY AND STRUCTURE OF USED DATA

The main objective of the contribution is to estimate the impact intensity of the predictors on the total value of the assets obtained by the target country j through realized mergers and acquisitions coming from the source country i and within a particular sector s at time t . This contribution follows the study (Hečková et al., 2016) and, using an extended database containing records of cross-border mergers and acquisitions during the period 1998-2015, determines the weight of predictors throughout the given period, but also separately for the period 2012-2015. As a result of the US financial sector crisis caused by (primarily) falling real estate prices, a large amount of uncovered debts (not only in America) has been the reason for the gradual loss of confidence, which has subsequently spread to the economies of the states. The impact of this situation on the European Union (EU) hit in 2008, which led to a significant recession of the country's cluster. In addition, there is a dichotomy between monetary policy (managed by the European Central Bank on the basis of the EMU as a whole) and the fiscal policy by which the Member States corrected this mismatch within the EMU member countries. This has contributed in the long run to a significant increase in the budget deficit (among other factors), which has led to further major problems. Since 2012, however, the economy has grown steadily, although many problems have not yet been resolved and the EMU's compactness has so far been hampered. However, based on the transition from a turbulent period to a period of (moderate) economic growth, we will consider part of the 2012 dataset (including) as part of the post-crisis period within the EU and EMU.

The dataset containing records of mergers and acquisitions made in the European area and in Turkey was based on Zephyr data (Bureau van Dijk 2016), Eurostat and Freedom House. This database includes data on mergers and acquisitions from 16 source countries¹ to 25 target countries² within the

¹ Belgium, Cyprus, Denmark, Finland, France, Greece, Netherlands, Luxembourg, Malta, Germany, Poland, Portugal, Austria, Spain, Italy, United Kingdom

service sector³ and the manufacturing sector⁴. To quantify the effect of the selected variables, generalized linear models (GLMs) were used, specifically a model using the log function in the gamma division. MS Excel, GNU Regression, Econometric and Time-series Library (Gretl, 2017a) and R (R 3.4.3) with RStudio (RStudio 1.1.442) were used to process the results. The used data were in relation to the nature of hypotheses (see below) structured based on two primary attributes, the time factor (complete and post-crisis expanded dataset) and type of sectoral affiliation, services respectively the industry in which the merger or acquisition took place. That is why we have also made three specific assessments, general (aggregated), service and industry assessments. Moreover, they in the framework of the extension of a previous study (Heckova et al. 2016) in addition to evaluating the development impact predictors of the volume of mergers and acquisitions during the period (1998-2015) joined the independent evaluation data extended period. The time span of the completed period was the range of years 2012-2015 representing the post-crisis period. The data base used in the analysis contained 111,024 records of cross-border mergers and acquisitions, while in the assessment of the crisis period (2012-2015) we worked with a range of 29,148 reported cases. After removing incomplete records and selecting data relating to purely cross-border mergers and acquisitions, the dataset scope has been reduced. Within the data used, cross-border mergers and acquisitions concerned only 5,820 (for the total dataset), respectively 1,632 records (for the extension period of the original data). However, the research sample has narrowed down due to the unavailability of at least one of the independent variables in a few cases. The total range of usable data for the whole observed period is 5,633 observations, whereas for its partial component (last four years) it includes 1,546 records. The list of dependent and independent variables used is in Table 1.

Table 1. List and description of used variables

<i>Variable</i>	<i>Description</i>
$\log (M\&A)_{jst}$	Mergers and Acquisitions. The variable is characterized by the logarithm of the volume of mergers and acquisitions made in the country <i>i</i> (source country) and in country <i>j</i> (target country) within the sector <i>s</i> over the time period <i>t</i> . Six variations of the entire dataset were used, i.e., all available values, mergers and acquisitions in the service sectors throughout the period, mergers and acquisitions in industrial sectors throughout the period, and similar 3 variations for the shortened period 2012-2015. (dependent variable)
$\log (GDP_{ist} * GDP_{jst})$	State of aggregated production in both countries. The variable is described by the logarithm of the sum of the gross domestic product of the source country <i>i</i> and produced in the sector <i>s</i> within the time <i>t</i> and the gross domestic product of the target country <i>j</i> in the given sector <i>s</i> and time <i>t</i> . (independent variable)
$\log (Market\ Capitalization / GDP_{jst})$	Market capitalization. The variable is defined by the logarithm of the market capitalization ratio and the aggregate output of the source country <i>j</i> in the specified sector <i>s</i> and time <i>t</i> . The variable is perceived as an indicator of the development of the stock market. (independent variable)
$\log (Distance_{ij})$	Distance. The variable is defined by the logarithm distance of the country <i>i</i> and the country <i>j</i> in kilometres, the distance being determined by the shortest possible distance. (independent variable)
$Border_{ij}$	The existence of a common border. The dummy variable, which gets the value 1 if the countries share a common border, otherwise gets the value of 0 (independent variable)
$Common\ Language_{ij}$	Common language. Dummy variable, which gets the value 1 if the target country and the source country are spoken in the same language. Otherwise, it gets 0 (independent variable)
$EU_{it}\ EU_{jt}$	Membership of countries in the EU. The dummy variable gets a value of 1 if both countries are members of the EU, otherwise they get a value of 0. The reference value is a situation in which at least one of the countries is not a member of the EU. (independent variable)
$EMU_{it}\ EMU_{jt}$	Membership of EMU countries. The dummy variable is assumed to be a value of 1 if both countries are members of the EMU, otherwise they get a value of 0. The reference value is a situation in which none of the countries is a member of the EMU. (independent variable)
$NonEMU_{it}\ EMU_{jt}$	Membership of EMU countries. The dummy variable gets 1 if one of the countries is a member of the EMU. Otherwise, it gets 0. The reference value is a situation where none of the countries is a member

² Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Netherlands, Latvia, Lithuania, Luxembourg, Hungary, Malta, Germany, Portugal, Austria, Romania, Slovak Republic, Slovenia, Spain, Italy, Turkey, United Kingdom

³ Banking, Healthcare, Education, Hotels and Restaurants, Insurance Companies, Other Services, Post and Telecommunication, Transport, Wholesale and Retail

⁴ Chemical, Rubber, Plastics and Non-metallic Products, Construction, Food, Beverages and Tobacco, Gas, Water and Electricity, Machinery and Equipment, Recycling, Metals and Metal Products, Primary Sector (Agriculture, Mining), Publishing and Printing, Textiles, Clothing and Leather, Wood, Cork and Paper

	of the EMU. (independent variable)
<i>Civil liberty (medium)_{it}</i>	The medium level of civil liberties in the source country. The dummy variable gets the value 1 if the Civil Liberties Index, which expresses the state of political democracy, personal freedoms and good government practices in the source country <i>i</i> , reaches level 2, respectively 3 during the period <i>t</i> . Otherwise, it gets a value 0. The reference value (high level) represents cases when the country reaches the value of index 1. (independent variable)
<i>Civil liberty (medium)_{jt}</i>	The medium level of civil liberties in the target country. The dummy variable gets the value 1 if the Civil Liberties Index, which expresses the state of political democracy, personal freedoms and good government practices in the target country <i>j</i> reaches level 2 during the period <i>t</i> . Otherwise, it gets a value 0. The reference value (high level) represents cases when the country reaches the value of index 1. (independent variable)
<i>Civil liberty (small)_{jt}</i>	The low level of civil liberties in the target country. The dummy variable gets the value 1 if the Civil Liberties Index expresses the status of political democracy, personal freedoms and good government practices in the target country <i>j</i> reaches levels 3, 4 or 5 during the period <i>t</i> . Otherwise, it gets 0. The reference value (high level) represents cases where the country reaches index value 1 (independent variable)

Source: own processing

Due to a lack of data with a value equal to the 3 civil liberties index in the source country, values 2 and 3 were merged. For similar reasons, the merged values of 3, 4 and 5 of this index for the target countries of mergers and acquisitions were included in one category. In general, we consider the strong direct impact of market conditions in the source and target countries, with the current intensive impact of the capitalization brought about by the cross-border merger respectively acquisition. We assume that the volume of mergers and acquisitions significantly affects the economic conditions of the target and source country. The direct relationship between the growth of aggregate production in both countries and similar dependence is also assumed in the case of the market capitalization of the target country. In addition, in cross-border mergers and acquisitions in the services sector, we anticipate a reduced intensity of economic conditions as opposed to the industrial sector, with the impact of macroeconomic conditions being further weakened in the post-crisis period. In addition, we predict that the increasing distance increases the investment trend as the volume of cross-border mergers and acquisitions increases due to penetration into new markets or gaining a competitive advantage, respectively due to the diversification of risk. This is another additional assumption that greater distance of the target and the source country brings greater value to the mergers and acquisitions made in industry than to services, all in the context of the weakening of the impact during the crisis period.

In the case of countries using a common language, we anticipate an increased value of mergers and acquisitions, with the intensity of this relationship being strengthened in the service sector, and this assumption results from the core characteristics of services. In addition, we assume that the predictor of the common language in the post-crisis period intensifies its influence due to more conservative preferences of companies and the efforts of source states (through politics) to maintain capital in the country. At the same time, we believe that the membership of the country in the EU is also an important factor, which is related to the more significant development of these markets and thus to the growth of the market value of the company. On this basis, we assume the existence of a directly proportional relationship. This effect is further increased if both countries are also EMU members at the same time. In the context of the post-crisis period, due to the loss of attractiveness of the European market, we anticipate a decrease in the impact of this determinant. The last postulate concerns the impact of the level of civil liberties, where we assume that the increasing number of freedoms in the source country, but also the number of cross-border mergers and acquisitions carried out, is decreasing. Based on the assumptions described above, we have compiled the following hypotheses:

H1: Growth in volume of mergers and acquisitions depends on the market conditions of the target and the source country.

H1.1: The impact of the determinants of economic conditions is lower in the case of cross-border mergers and acquisitions in the service sector.

H1.2: The impact of market conditions determinants is weakening in the post-crisis period.

H2: The growing distance of the target and the source market of the investment (in the form of mergers and acquisitions) contribute to the growth of the cross-border mergers and acquisitions.

H2.1: The impact of the distance is influenced by the amount of cross-border mergers and acquisitions made during 2012-2015.

H3: The use of a common language contributes to increasing the volume of cross-border mergers and acquisitions made.

H3.1: Intensity of the impact of the common language is higher in the service sector.

H3.2: Intensity of the impact of the common language in the post-crisis period increases.

H4: Membership of both countries (source and target) in the EU brings an increase in the volume of cross-border mergers and acquisitions.

H4.1: In the post-crisis period, EU membership is associated with a decline in the volume of cross-border mergers and acquisitions.

H5: In addition, if the countries are EMU members, the potential for the level of investment increases further.

H5.1: In the post-crisis period, membership of EMU countries is associated with a decline in the volume of cross-border mergers and acquisitions.

H6: The declining level of civil liberties in the target country reduces the amount of investment in the form of cross-border mergers and acquisitions.

H6.1: The declining level of civil liberties in the source country reduces the amount of investment in the form of cross-border mergers and acquisitions.

To determine the intensity of the impact of the selected predictors on the size of the cross-border mergers and acquisitions realized, generalized linear models (GLM), gamma division and link log function (Nelder, 2000) were used, including two classic linear model extensions (OLS), assuming a normal distribution of random errors for the mean value of the systematic component, $y = \sum \beta_j x_j$, where β_j are the estimated parameters. The first extension represents the extension of a group of random errors of an exponential family with one parameter including Poisson, binomial, gamma, and inverse Gaussian distribution. The second extension is predictive of predictor additivity on the transformed scale given by the linking function. Fit statistics derived from the assurance test logarithm are called Deviance (Nelder and Wedderburn 1972; McCullagh and Nedler 1989). In the case of the dependent variable and the first three independent variables (except for the dummy variables), we also detected the presence of the normal distribution (Shapiro and Wilk 1965), which is a necessary condition for performing a regression analysis, the violation of which may lead to inaccurate deductive conclusions. The results of data normality testing are set out in the annex, specifically in Table 6. The same indicators used the logarithmic values for consideration with the occurrence of the partial elasticity of the determinants. This will reflect the factoring (in the case of gross domestic product), or the percentage (and not absolute) increase in the change in the variables used. This led to the compilation of the following equation for the source country i , the target country j in the sector s and at time t :

$$\begin{aligned} \log(M\&A_{ijst}) = & \beta_0 + \beta_1 \log(GDP_{ist}GDP_{jst}) + \beta_2 \log\left(\frac{MC_{jst}}{GDP_{jst}}\right) + \beta_3 \log(Dist_{ij}) + \beta_4 bor_{ij} \\ & + \beta_5 ComL_{ij} + \beta_6 EU_{it}EU_{jt} + \beta_7 EMU_{it}EMU_{jt} + \beta_8 EMU_{it}nonEMU_{jt} + \beta_9 CL_{it} \\ & + CL_{jt} \end{aligned} \quad (1)$$

where $M\&A$ is the size of the cross-border mergers and acquisitions, GDP is characterized by the level of aggregate country production (data from the Zephyr database (Bureau van Dijk, 2016)), MC describes the market capitalization in the country (Zephyr (Bureau van Dijk, 2016)), $Dist$ is identified as the distance of the target and the source country (Zephyr (Bureau van Dijk 2016)), $ComL$ records the use of the same or related language (Zephyr (Bureau van Dijk, 2016)), $the EU$ is a member of the country in the EU

(Eurostat), *the EMU* represents the EMU (Eurostat), *nonEMU* characterizes non-EMU countries (Eurostat), and *CL* is an indicator of civil liberties in the country (Freedom House).

Due to the presence of heteroscedasticity (Breusch and Pagan, 1979) in the applied GLM model, we have also arrived at robust variance estimation, namely by computing a standard error with robust standard errors (Arellano, 1987). Another important step in the analysis is the discovery of the existence of the multicollinearity of independent variables (Farrar and Glauber, 1967), which indicates the use of two or more variables which are significantly interdependent. The Variance Inflation Factor (Mansfield and Helms, 1982) is an option for detecting the presence of multicollinearity in the assembled regression model.

The main aim of the paper is to analyze the amount of implemented cross-border mergers and acquisitions divided according to the European Union countries in the monitored period of 1998-2015. The analysis is divided into two parts. In the first part we monitor those Member States of the European Union, which initiated implementation of cross-border mergers and acquisitions most frequently, and the volume of their implementation. In the second part we analyze those Member States of the European Union which were most often targeted by cross-border mergers and acquisitions, and in what volume they were carried out. We conducted the analysis for the aforementioned period of 1998-2015. In both parts of the analysis we focused on an identification of the countries where M&A were similar in their volumes. Correspondence analysis was used to acquire the results and define the volume of the implemented cross-border mergers and acquisitions in the individual Member States of the European Union divided into five intervals.

For the purposes of the analysis, a database containing records of cross-border mergers and acquisitions carried out in the European Economic Area (EEA) and in Turkey, the data of which were taken from the Zephyr database (Bureau van Dijk, 2016), was used. Our database includes data on mergers and acquisitions carried out from 16 source countries⁵ to 25 target countries⁶ in the selected production⁷ and service⁸ sectors. MS Excel and SPSS statistical software were used to process the analysis results.

2. DATA ANALYSIS AND RESULTS

Based on the above model, we have compiled a functional relationship for the aggregate data of cross-border mergers and acquisitions in the period 1998-2015, expressing the patterns between the dependent variable and the other factors used, presented in Table 2.

Table 2. Regressive model for the volume of cross-border mergers and acquisitions

	<i>coefficient</i> <i>p-value of t-test</i>	<i>Robust Stand. Error</i>
constant	1,2757 [< 2,2e-16] ***	0,0173
log (GDP _{ist} * GDP _{jst})	0,5235 [< 2,2e-16] ***	0,0008
log (Market Capitalization / GDP _{jst})	0,8637 [< 2,2e-16] ***	0,0006
log (Distance _{ij})	-0,2113 [< 2,2e-16] ***	0,0020
Border _{ij}	-0,0596 [1,167e-04] ***	0,0015

⁵ Belgium, Republic of Cyprus, Denmark, Finland, France, Greece, Netherlands, Luxembourg, Republic of Malta, Federal Republic of Germany, Republic of Poland, Portuguese Republic, Republic of Austria, Spain, Italy, United Kingdom

⁶ Belgium, Republic of Bulgaria, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Netherlands, Republic of Lithuania, Republic of Latvia, Luxembourg, Hungary, Republic of Malta, Federal Republic of Germany, Portuguese Republic, Republic of Austria, Romania, Slovak Republic, Republic of Slovenia, Spain, Italy, Turkey, United Kingdom

⁷ Food, Beverages, Tobacco, Textiles, Clothing, Leather, Chemicals, Rubber, Plastics, Non-Metallic Products, Metals And Metal Products, Machinery, Equipment, Furniture, Recycling, Gas, Water, Electricity, Construction

⁸ Transportation, Hotels and Restaurants, Post and Telecommunications, Insurance, Banking

Common Language _{ij}	-0,0008 [0,9748046]	0,0026
EU _{it} EU _{jt}	0,2629 [< 2,2e-16] ***	0,0031
EMU _{it} EMU _{jt}	0,1905 [< 2,2e-16] ***	0,0017
NonEMU _{it} EMU _{jt}	-0,0258 [0,0529] *	0,0013
Civil liberty(medium) _{it}	-0,0783 [2,04e-08] ***	0,0014
Civil liberty(medium) _{jt}	0,0391 [0,01339] **	0,0016
Civil liberty(small) _{jt}	0,6086 [< 2,2e-16] ***	0,0016

The GLM model was used. Marking *, **, resp. *** presents statistical significance at significance levels of 10%, 5% and 1%. The number of observations is 5,633.

Source: own processing

The results of the analysis presented in Table 2 revealed that the most pronounced impact (in absolute terms, on the magnitude of the scale of variables) was the logarithm value of the gross domestic product of the economy from which capital flows (in the form of mergers or acquisitions) and the gross domestic product of the economy, to which the capital was directed. This stems from the underlying assumption that in an economy that is in the growth phase individual entities are able to accumulate a larger volume of capital resulting from its higher appreciation, which may result from increased consumption of entities in the domestic market or from increased demand on foreign markets (increasing competitiveness). Variables with a more pronounced impact on the volume of mergers and acquisitions made may also include the market capitalization ratio to the gross domestic product of the respective sector of the country to which the merger was directed. This is an important indicator of the development of the stock market. Therefore, this relative statement of the change in capitalization (ranging from <0.01% to 227.80% for the range of this variable) determines the impact of the market economy on the size of the market of merger and the acquisition. The directly proportional relationship between the size of the merger and the market capitalization shows that, within the European countries, mergers and acquisitions for businesses were the best opportunity to acquire a significant (in some cases monopoly) market positions, with the actual output of the merged companies being at a significantly lower level than their value, the volume of mergers and acquisitions in target companies with the necessary restructuring is increasing. Based on the results, we expect the market capitalization ratio and the gross domestic product of the target country to increase by 0.86% in the 1% growth in the cross-border mergers and acquisitions. Based on the relationships described above, we can accept the H1 hypothesis. The distance between the two countries that with which the acquisition involved, has a negative impact on its size, indicating a tendency for companies to increase their market share in the neighbouring markets (which are already in place) and marginalizing the impact of penetrations on new markets. With a 1% increase in ceteris paribus, we expect the volume of cross-border mergers and acquisitions to fall by 0.21%, and the impact of this predictor has intensified compared to the analysis of the period until 2012. The above results speculate on the inability to accept the H2 hypothesis. This has happened because if it is a very near-cultural country, where the subject already has a certain status; it needs to invest heavily to improve it. In these countries there is a prerequisite for more closely linked markets, which represents a crucial role for businesses in gaining any additional competitive advantage, and therefore the volume of mergers and acquisitions increases significantly.

At the same time, cross-border mergers and acquisitions were also targeting foreign language countries which were related to the acceptable level of transaction costs for the realized investment and potential market penetration. The impact of the existence of a common border contributes to weakening the effect of distance (or proximity), and in this case a similar analysis by 2012 shows the opposite impact of the predictor. Based on the results of the analysis, we cannot accept the H3 hypothesis. In the neighbouring countries, the volume of cross-border mergers and acquisitions decreases (up to 12.82%), as companies have relatively easy access to such markets (from different perspectives, such as cost,

legislative, cultural, etc.) which reduces the need for such a form of investment. The incentive for companies to implement mergers and acquisitions within the European Union corresponds to efforts to strengthen their position in one of the largest common markets. This is in particular related to uniform compliance with standards and to the compatibility of authorizations between the Member States of the Union or to a better knowledge of all essential elements. With both countries in the EU, we predict the effect of increasing the volume of cross-border mergers and acquisitions by 83.19%. This effect is even more amplified when both countries are members of the European Monetary Union (the expected increase in cross-border mergers and acquisitions of 55.06%), in which the single monetary policy applies, financial liberalization and there is no exchange rate fluctuation. Based on this, we accept the H4 hypothesis.

It is interesting to note that if mergers and acquisitions took place between a member state of the monetary union and a country that did not belong to it (but at the same time it was a member of the EU), there was a reduced impact (a decrease of 5.76%) compared to the reference group of the two non-EU countries. It was caused by two influences. The first is associated with higher fluctuation in the exchange rate, which has the potential to contribute to a nominal increase in investment, and the second represents the rigidity of a monetary union monetary policy that reflects the specificities of each of its members in the short term of its performance as a whole. In comparison with the higher flexibility of the monetary policy of the non-member country of the EMU, this causes this additional impact. Based on this, we accept the H5 hypothesis. Compared with the previous study, however, the intensity of the impact of EU and EMU membership has weakened, while at the same time achieving statistical significance for the situation where one of the countries is a member of the EMU and the other does not. The last observed factor was the level of civil liberty. Based on the results of the analysis, we must consider civil liberty in the source and target country separately. For source country conditions, we have found that with the increase of liberties, the size and frequency of mergers and acquisitions as a form of capital investment, i.e. in the case of the source country belonging to the group of countries with the average value of the index (within the range observed), we expect a reduced value of cross-border mergers and acquisitions of 16.50%. Lower business risks in such countries do not create too much pressure to diversify the portfolio, but under market conditions they contribute to cost optimization, respectively profits. In addition, countries with higher civil liberties achieve relatively good economic performance and, therefore, reinforce the country's capital investment tendencies. It is the opposite effect that occurs in the country where the mergers are directed.

The lower level of civil liberties is also related to the level of corruption and thus to the greater chance of the company to obtain all necessary documents, whether the relative lower value of the company's redemption value versus its real value. The specific expected value of cross-border mergers and acquisitions moving to relatively less free countries is higher by 306.07%. The effect is weakened at a moderate level of civil liberty (an increase of only 9.43%), with reference to the countries with a high degree of civil liberties. In addition to corruption, the development of economies with higher civil liberties can also help reduce the volume of mergers and acquisitions, hoping to increase the capital needed to make such a form of investment. Based on these facts, the H6 hypothesis cannot be accepted until the H6.1 hypothesis is accepted. Compared with the analysis of the period until 2012, the conclusions were retained, but with a decrease in the impact intensity of these predictors. Table 10, which is included in the appendix, contains a summary of all impacts at the assumed 1% change of independent variables, respectively when changing logical values of dummy variables from 0 (false) to 1 (true). The results of the analysis of changes in the impact of the selected mix of variables on cross-border mergers and acquisitions in the service sector are summarized in Table 3.

Based on the results of the analysis in Table 3, we were able to determine that the impact of the gross domestic product and market capitalization of the sector in both countries declined. This also captures the expected increase in the value of cross-border mergers and acquisitions in the case of 1% growth of variables, 0.55% increase in the gross domestic product of both countries and 0.85% growth in market capitalization. The weight of aggregate production of the source and target countries slightly strengthened compared to the previous study, while the market capitalization slightly decreased. This was due to the characteristics of the trading companies as such, but also due to the slightly lower volume of investment in the service sector. Businesses in the service sector have a value based on goodwill,

know-how (technologies) or human resources, and their value is significantly less dependent on long-term tangible assets than for companies in the industrial sector. The distance predictor, respectively its logarithm has seen a stronger impact in the service sector, even in comparison with the previous study. Specifically, this is a 0.26% decrease in investment value in the case of a 1% increase in the distance of both countries. This result points to the fact that services are relatively readily available even at greater distances, with businesses not under pressure to move their business closer to the target markets. The larger volume (and even the number) of mergers and acquisitions in the service sector was recorded in countries close to the source country, but in the case of neighbouring countries, the expected volume of cross-border mergers and acquisitions decreased by 18.07%, while in the previous study this predictor was insignificant. By diversifying the production sites of a company, they reduce the average labour price, assuming only a slight or no change in productivity. On the basis of these factors, the intensity of the impact of EU membership in the volume of mergers and acquisitions carried out is gradually decreasing. Interestingly, both variables relating to EMU membership have increased impact compared to the results of the overall dataset analysis. For both member states of the monetary union, this is a 62.91% increase in the dependent variable and in the case of a member and non-member country this is a decrease of 9.34%.

Table 3. Regressive model for the volume of cross-border mergers and acquisitions in the service sector

	coefficient <i>p</i> -value of <i>t</i> -test	Robust Stand. Error
constant	1,2476 [< 2,2e-16] ***	0,2226
log (GDP _{ist} * GDP _{jst})	0,5475 [< 2,2e-16] ***	0,0107
log (Market Capitalization / GDP _{jst})	0,8511 [< 2,2e-16] ***	0,0076
log (Distance _{ij})	-0,2608 [< 2,2e-16] ***	0,0244
Border _{ij}	-0,0865 [2,19e-05] ***	0,0204
Common Language _{ij}	0,0571 [0,0874] *	0,0334
EU _{it} EU _{jt}	0,1595 [9,73e-05] ***	0,0409
EMU _{it} EMU _{jt}	0,2119 [< 2,2e-16] ***	0,0216
NonEMU _{it} EMU _{jt}	-0,0426 [0,0068] **	0,0157
Civil liberty(medium) _{it}	-0,0960 [7,36e-08] ***	0,0178
Civil liberty(medium) _{jt}	0,0412 [0,0383] **	0,0199
Civil liberty(small) _{jt}	0,6659 [1,17e-013] ***	0,0897

The GLM model was used. Marking *, **, resp. *** presents statistical significance at significance levels of 10%, 5% and 1%. The number of observations is 3,871.

Source: own processing

Moreover, compared to the reference status (both countries are not members of the EMU) it has a greater impact on the change of the dependent variable representing the membership of the two countries in the EMU than the variable characterizing the combination of member and non-member EMU countries. This phenomenon is linked to the nature of the economy of member and non-member EMU countries. While the majority of EMU non-member countries (throughout the observed time period) are primarily industrial (post-communist) (with the exception of the countries of Sweden, Denmark and the United Kingdom), the majority of EMU countries have a relatively large share of sales, which has increased the impact on the first combination. In addition, based on the analysis, the impact of the predic-

tors on EU membership or EMU is lower than in the previous study. The impact of civil liberty as a predictor of cross-border mergers and acquisitions in a specific service sector assessment (compared to the overall dataset) decreased for the middle level of the target country, but this change was only marginal. Based on the results of the analysis, we expect a 19.84% decrease in the volume of cross-border mergers and acquisitions, if the source country is among the middle-free countries or 9.96% increase in investment compared to the reference group (most liberal countries) and the target country is among the middle-free sample countries. However, the impact of the low level of civil liberties, as the most intense of all civil liberties, has grown even more markedly. This is so that the expected amount of the investment in the form of cross-border mergers and acquisitions is higher by 363.34% within these countries. This knowledge is related precisely to the above-mentioned nature of most of the target countries, which during the transition period (but in many cases and beyond) achieved only the average assessment of the civil liberties used in the methodology used as a low level due to the lack of records of The Civil Liberties Index with values 6 and 7 (worst possible). As with both the EU and EMU countries predictors, as well as for civil liberties predictors, it should be noted that the results provide similar conclusions to the previous study, but with reduced intensity. Table 8, containing all expected M&A changes as a result of editors' predictions (while maintaining the ceteris paribus condition) are included in the appendix.

The results of the analysis of the impact of selected predictors on the volume of cross-border mergers and acquisitions in industry are presented in Table 4.

Table 4. Regressive EU_{it} model for the volume of cross-border mergers and acquisitions within industry

	coefficient p-value of t-test	Robust Stand. Error
constant	1,3124 [< 2,2e-16] ***	0,2718
log (GDP _{ist} * GDP _{jst})	0,4807 [< 2,2e-16] ***	0,0125
log (Market Capitalization / GDP _{jst})	0,8817 [< 2,2e-16] ***	0,0116
log (Distance _{ij})	-0,0799 [0,0203] **	0,0344
Border _{ij}	-0,0104 [0,649]	0,0228
Common Language _{ij}	-0,0427 [0,320]	0,0430
EU _{it} EU _{jt}	0,4466 [< 2,2e-16] ***	0,0461
EMU _{it} EMU _{jt}	0,1261 [2,02e-07] ***	0,0243
NonEMU _{it} EMU _{jt}	0,0473 [0,045] **	0,0237
Civil liberty(medium) _{it}	-0,0865 [9,26e-05] ***	0,0221
Civil liberty(medium) _{jt}	0,0737 [0,003] **	0,0249
Civil liberty(small) _{jt}	0,4234 [3,68e-05] ***	0,1026

The GLM model was used. Marking *, **, resp. *** presents statistical significance at significance levels of 10%, 5% and 1%. The number of observations is 1,762.

Source: own processing

Industry analysis has shown the opposite effect for aggregate production and market capitalization predictors, as in the case of partial evaluation of services. This is related to the fact that mergers and acquisitions in industry are more prone to the size of the production of a given segment in the target

country (excluding production in the source country), this size being understood as the current state of development of the sector in the country (and its competitiveness). Based on the analysis, we expect that the 1% change in the gross domestic product of both countries will increase the volume of cross-border mergers and acquisitions by 47.95%. Moreover, the change in market capitalization in terms of the value of the merged entity is less significant. The ratio representing the market capitalization and gross domestic product of the sector in the target country is higher, namely the predicted increase of 1% in this predictor is expected to increase the volume of 0.88% in the form of cross-border mergers and acquisitions. In addition, the fact that mergers and acquisitions in the period under review were slightly lower in the case of purely primary and secondary sectors, compared to the partial evaluation of other sectors. However, the impact of both market conditions predictors has slightly increased compared to the previous study, which is related to more conservative business preferences in the manufacturing sector, not only in the area of investment. Among other factors with a lesser impact on the volume of realized mergers and acquisitions, we will start by assessing the distance of the country from which the investment is directed and the country to which this capital is heading.

Based on the results, we must state that this time (compared to the previous study) the relationship of the given variable formed by the decadal logarithm changed to an indirect dimension. That is, by increasing the distance by 1%, the expected volume of cross-border mergers and acquisitions will be reduced by 0.08%, while at the same time the least intensive impact will be among the first three analyses performed. This is attributed to two influences. The first comes from uniform standards and standards for products within the Common Economic Area (the possibility of distributing products across the EU from any destination). The second corresponds to the fact that the total costs of industrial companies depend on the cost of labour, and companies are willing to invest in remote destinations only with a certain reduction in transaction costs and a reduction in variable costs (resulting from labour costs). Just the distance and closer accessibility of the outlets reduces pressure on logistics.

The distance predictor is clearly linked to the existence of a common border and a common language, which were considered statistically insignificant in the analysis of the period until 2012. The analysis also shows that companies in this sector are more likely to concentrate capital on a common European market, which is linked to the above-mentioned common standards, which greatly simplifies international trade. Companies are primarily trying to maintain and strengthen their position in the common market. When considering both countries as EU members, in that case, the predicted volume of cross-border mergers and acquisitions will increase by 179.63%. This effect is even more reinforced by the membership of the two countries in the monetary union, specifically 33.69%. Both of these predictors, however, have reduced the intensity of cross-border mergers and acquisitions compared to previous research.

The finding that the combination of a member and a non-member country is more significant than the reference option (none of the countries is a member of the EMU) has a more pronounced impact (an increase of 11.50%) is a change to the analysis from the period to 2012. This shows the effect of the fluctuation of the currency pairs of the selected countries. Businesses are also trying to avoid losses due to trade in two different currencies or transaction fees in foreign exchange. At the same time, the different development of these currencies may strengthen the capital investment tendency if the exchange rate is favourable for the source country. The civil liberties factor is stronger in the industrial sector (compared to data from the service sector only) within the source country and the middle level of the target country, all the while maintaining the same type of relationship. In this context, cross-border mergers and acquisitions originating in the mid-free countries recorded an 18.05% lower expected volume. In the case of little or no. medium-free countries are predicted by the volume of cross-border mergers and acquisitions of 165.08%, respectively 18.51% higher.

This points out that cross-border mergers and acquisitions are considerably more sensitive to civil liberties in this sector, while with a decreasing level in the source country the volume is increasing (and most likely also the number) and, conversely, it is increasing in the target country. The summary of percentage changes in the case of predictor adjustment is captured in Table 8 in the Appendix. In addition to the above analyses, we have come to a specific assessment of the evolution of the set of indicators in the period 2012-2015. In addition, this time scatter represents an additional extension of the original data compared to the previous study, and at the same time represents a turbulent post-crisis period with-

in the European Union and some other states. These specifics were the reason for partial analysis of the dependent variable. As a result, we are able to express a change in the company's strategy for investing capital through cross-border mergers and acquisitions. The results of the above analysis are shown in Table 5.

Table 5. Regressive model for the volume of cross-border mergers and acquisitions in the period 2012-2015

	<i>coefficient</i> <i>p-value of t-test</i>	<i>Robust Stand. Error</i>
constant	1,504 [< 2,2e-16] ***	0,3352
log (GDP _{ist} * GDP _{jst})	0,4356 [< 2,2e-16] ***	0,0161
log (Market Capitalization / GDP _{jst})	0,8951 [< 2,2e-16] ***	0,0121
log (Distance _{ij})	-0,1114 [0,0117] **	0,0442
Border _{ij}	-0,0240 [0,5815]	0,0436
Common Language _{ij}	-0,1107 [0,1408]	0,0752
EU _{it} EU _{jt}	-0,3862 [0,0006] ***	0,1128
EMU _{it} EMU _{jt}	0,0376 [0,3953]	0,0442
NonEMU _{it} EMU _{jt}	-0,2036 [9,19e-015] ***	0,0263
Civil liberty(medium) _{it}	0,1952 [0,0469] **	0,0982
Civil liberty(medium) _{jt}	-0,6516 [< 2,2e-16] ***	0,0506
Civil liberty(small) _{jt}	0,5875 [0,0006] ***	0,1701

The GLM model was used. Marking *, **, resp. *** presents statistical significance at significance levels of 10%, 5% and 1%. The number of observations is 1,546.

Source: own processing

The results in Table 5 show that even in this period (2012-2015) the primary impact still maintains the size of both countries' production and the market capitalization of the merger. Although the results of a short-term analysis suggest a slight reduction in impact, it is rather a disproportionate reduction in the volume of this type of investment against the reduction in aggregate production of the two countries concerned. With an aggregate output predictor of 1% rising, the expected level of cross-border mergers and acquisitions increases by 0.43%, but compared to the previous study, the impact of this predictor slightly increased. The same situation occurred in the case of market capitalization. However, based on the development of other regressions, we can think that these factors are primarily important in bad times, and the impact of others is even more marginalized. After an increase of 1% in market capitalization, we expect an increase in the volume of cross-border mergers and acquisitions by 0.89%. This is related to the fact that commercial companies are not willing to undertake a greater risk at worse times, to use available accumulated resources, and most of the strategic decisions depend on the current economic situation. These findings for these two predictors of economic conditions lead to the assumption of the H1.2 hypothesis. The analysis showed the absence of statistical significance of the predictor of the existence of a common border. However, in the case of a distance predictor that is slightly linked to the existence of a common border, materiality has grown to 5% with a slightly more intensive indirectly proportional relationship where the projected 1% increase is the 0.11% decrease in the expected volume of cross-border mergers and acquisitions, on the basis of which the H2.2 hypothesis is accepted. Even for the period defined in 2012-2015, the statistical significance of the common language predictor did not appear, so we cannot accept H3.2.

This points out that within the European Area, in this specific period, businesses have sought to increase the volume of cross-border mergers and acquisitions across the area, regardless of cultural and linguistic proximity. Thus, they strengthened their market position in markets where they traded, but they also sought to penetrate new markets in case of favourable transaction costs. This indicates stability preference (with lower growth rate) before more intense growth. From the above it follows that the factor of distance (and associated common border predictor) during the period of crisis has played a less important role, as in many cases commercial companies have been able to access distant destinations (and markets) on the basis of risk diversification. The membership of the two countries in the EU brings with it a reduction in the predicted volume of cross-border mergers and acquisitions, namely a 58.90% reduction. In the case of EMU membership, no significance is reported, with similar comparisons (the results of the first analysis and the previous study) resulting in a reduction in the impact of an extended database. This shows that EMU countries are indifferent to the reference sample (where none of the countries belonged to the EMU), and no expectation of a higher total volume of cross-border mergers and acquisitions was present. In the case of the original database (by 2012), we were able to consider such an increase in volume. The cause of these predictors is a slight loss of EU attractiveness, respectively. The EMU of the euro zone compared to other non-member countries, for its greater rigidity and complexity (European systems). This is also associated with ambiguity in the case of the Eurozone monetary policy, which takes into account only aggregated developments in different countries in their individualities and autonomous fiscal policy.

The specificity of this subset of indicators is that the extension of the original data brought the significance of the NonEMU/EMU_j variable (one of the countries of the pair is a member of the Eurozone and the other is not) compared to the previous study, as confirmed by the result of this analysis presented in Table 5. We expect the decrease in the level of cross-border mergers and acquisitions by 37.43%. As a consequence of such a situation, we can regard, on the one hand, the attitude of the EMU member countries that tend to invest within this Community (and also because of the volatility of monetary pairs) and, on the other hand, the other 9 non-member countries where the distrust (especially the most advanced) in the current system of the common European currency. This implies accepting the H4.1 hypothesis regarding EU membership and the impossibility of the H5.1 hypothesis regarding membership in the EMU. At the same time, however, we consider it necessary to add that EU and EMU countries are indifferent to the change in the volume of cross-border mergers and acquisitions, but there has generally been a significant fall in impact compared to the strong positive impact in the first analysis (and in the previous study). In the case of the predictor on the civil liberties of the source country, there has been a change in the type of relationship between the predictor and the volume of cross-border mergers and acquisitions.

The change leads to a situation where the volume of mergers and acquisitions is decreasing as a result of the growth of civil liberties (as the reference sample is the country with the highest degree of civil liberties). In the case of the target country, it appears that if the country records the lowest values (of the achieved values within the sample) of the civil liberties, the expected volume is higher (56.73%) than the highest possible level of civil liberties (reference sample). At the medium level, the lowest volume of invested capital in mergers and acquisitions is assumed, and we expect a decrease of 77.70%, while we expect an increase of 286.81% for the least-free countries. As the financial crisis has had a greater impact on this group of states, it has manifested itself in the above described change. Table 8 in the appendix shows the percentage change between original and adjusted values within this model.

DISCUSSION AND CONCLUSION

Based on our analysis results, we were able to draw insights into selected predictors affecting the size of cross-border mergers and acquisitions as one of the forms of investment. Development, respectively this phase of the economy greatly contributes to the ability of companies to accumulate free capital and to capitalize on it in some form of investment through mergers and acquisitions. Uddin and Boateng (2011) also confirmed the importance of predictors such as aggregated country production or market capitalization, have been able to use macroeconomic indicators to help accumulate funds for investment firms. In terms of market conditions, we also consider it important to mention the extremely large share

of market capitalization on gross domestic product in a particular part of the sample (especially until 2006), which relates to the transformation period of post-communist economies. However, the market capitalization characteristics change in the case of a specific assessment of mergers and acquisitions in industry and services, which is related to the nature of these companies. Businesses in the service sector have a different asset structure with a larger proportion of intangible assets, goodwill, know-how, ICT technology, etc., which implies a level of investment in the form of cross-border merger, respectively acquisitions. In the case of companies in the industrial sector, this is the opposite, reflecting the slope of the respective regressors. At the same time, we have noticed a decline in the impact of market conditions predictors in the context of the analysis of the crisis period, which is related to the use of part of the accumulated capital to maintain the company's status and the more conservative (and less risky) strategic decisions of these companies.

The analysis also found that investments from European countries were centred mainly on relatively close economies that are culturally and linguistically close to each other. However, this influence became indifferent in the crisis period. In addition, the level of mergers and acquisitions that had taken place declined when neighbouring countries were concerned. These phenomena clearly lead to the conclusion that the companies in the survey examined the investments that led to the strengthening of their market position within the economies where they were already doing business, rather than the investments seeking to attract new markets. Based on the study (Bjorvatn, 2004) regarding the choice of local, cross border market, we have concluded that, despite the further inclusion and enlargement of EU countries, the entry costs for strengthening investment trends in outlying countries have not been reduced to a sufficient extent also in view of the profitability of these markets. Mergers and acquisitions during the crisis period in the industrial and service sectors are primarily not remote from the distance, although the distribution of products or the distance from the contractors is important, but for the whole analysed period, the dependence of the investment size on the target country was demonstrated, (which are interested in large or multinational companies) allows them to distribute them over long distances only to a certain extent. However, during the period of crisis, there was no tendency for companies to invest in the surrounding area, in the economy itself. Significant growth in investment in remote destinations (resulting from the loss of the distance predictor) during a turbulent period results in increased willingness (for example as a result of the need for restructuring, etc.) of companies (perceived as potential competitors of the source company) to merge or acquire this in synergy with state measures to attract additional capital into the economy.

Simplicity of access, greater awareness or unity of standards, and European market rules have contributed to increased investment and merger and acquisitions among Member States (EU). This phenomenon is further strengthened if both countries are simultaneously members of the EMU, which is also associated with lower entry costs and profitability resulting from same-currency investment. If only one of the countries is a member of the EMU, the volume of mergers and acquisitions is lower, resulting from the fluctuation of other currency pairs with a rigid euro taking into account developments in all EMU countries. This contributes to uncertainty about the real profitability of the investment. In the case of investments in the service sector, the importance of country membership in the EU is diminishing, which is related to the development of this sector and the labour factor utilization associated with higher variable costs. The results of the impact of civil liberties have shown that, in the case of the target country, a lower level of the civil liberties index showed a higher level of investment. As part of civil liberties, we also consider civic maturity, which also influences the willingness of employees to strike. This predictor in countries with lower civil liberties is also linked to the amount of labour cost. This, in synergy with harnessing the labour factor (lower than for more free countries) and with only minimal changes in productivity, leads to an increased competitive advantage through lower production costs. In addition, economies with lower civil liberties are better able to absorb mergers and acquisitions, leading to various subsidies or tax breaks for incoming companies and cost reductions. The low level of civil liberties (in comparison with other countries with a rather average level) was seen in particular by the new Member States of the eastern part of the EU. Visic and Peric (2011) deal with the issues of these economies, but the effect of corruption on the volume of mergers and acquisitions is just the opposite.

APPENDIX

Table 6. Tests for normality

	Test statistics		Test statistics	
	$M\&A_{jst}$	<i>P</i> -value	$GDP_{ist} GDP_{jst}$	<i>P</i> -value
Doornik-Hansen	72,5102	1,79727E-16	720,1	4,28767E-157
Shapiro-Wilk	0,992785	8,09347E-47	0,953459	4,86967E-39
Lilliefors	0,0382217	0,0000	0,0913475	0,0000
Jarque-Bera	96,0061	1,42083E-21	673,436	5,82296E-147
	MC_{jst} / GDP_{jst}		$Dist_{ij}$	
Doornik-Hansen	46,4463	8,20943E-11	310,138	4,51218E-68
Shapiro-Wilk	0,995449	2,70044E-12	0,967274	5,96371E-34
Lilliefors	0,02425	0,0000	0,108275	0,0000
Jarque-Bera	61,3722	4,71190E-14	172,697	3,15710E-38

Source: Own processing

Table 7. Test of collinearity

	VIF					
	model 1	model 2	model 3	model 4	model 5	model 6
$GDP_{ist} GDP_{jst}$	1,395	1,503	1,236	1,692	1,804	1,448
MC_{jst} / GDP_{jst}	1,212	1,246	1,110	1,149	1,170	1,130
$Dist_{ij}$	1,361	1,342	1,452	1,524	1,548	1,576
Bo_{ij}	1,751	1,792	1,724	2,041	2,159	1,795
$ComL_{ij}$	1,134	1,163	1,143	1,198	1,203	1,205
$EU_{it} EU_{jt}$	1,795	1,782	1,897	3,949	4,098	3,144
$EMU_{it} EMU_{jt}$	2,071	2,072	2,095	2,434	2,457	2,469
$EMU_{it} nonEMU_{jt}$	1,574	1,604	1,456	1,676	1,715	1,510
$CL(medium)_{it}$	1,376	1,381	1,426	1,077	1,047	1,290
$CL(medium)_{jt}$	1,590	1,547	1,760	2,021	2,071	1,848
$CL(small)_{jt}$	1,609	1,666	1,569	4,335	4,563	3,317

Source: Own processing

Table 8. Percentage changes of original and adjusted values

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	
$\log(GDP_{ist} + GDP_{jst})$	original	540543429	52973118885	23121099490	114442605,6	1189480020	261467591,4
	modified (+ 1 %)	543366465	53262474125	23231958259	114939771,8	1194566328	262525527,7
	% change	0,5222588	0,546230325	0,479470142	0,434424076	0,427607702	0,404614721
$\log(\text{Market Capitalization} / GDP_{jst})$	original	540543429	52973118885	23121099490	114442605,6	1189480020	261467591,4
	modified (+1 %)	545208933	53423637176	23324833911	115466500	1200080776	263778248,7
	% change	0,8631136	0,85046586	0,88116234	0,894679425	0,891738941	0,88372608
$\log(\text{Distance}_{ij})$	original	540543429	52973118885	23121099490	114442605,6	1189480020	
	modified (+ 1 %)	539408128	52835837026	23102735829	114315812	1187808028	
	% change	-0,210029	-0,25915382	-0,07942382	-0,11079223	-0,14056492	
$Border_{ij}$	original - 0	620055541	52973118885				
	modified - 1	540543429	43402169984				
	% change	-12,82338	-18,0675579				
$\text{Common Language}_{ij}$	original - 0		52973118885			1189480020	
	modified - 1		60420225740			849626699	
	% change		14,05827524			-28,5715872	
$EU_{it} EU_{jt}$	original - 0	295073761	36692748448	8268609508	278454177	3285285761	
	modified - 1	540543429	52973118885	23121099490	114442605,6	1189480020	
	% change	83,18925	44,36944935	179,6250019	-58,9007402	-63,7937121	
$EMU_{it} EMU_{jt}$	original - 0	540543429	52973118885	23121099490			
	modified - 1	838167067	86297724332	30910745717			
	% change	55,060078	62,90852068	33,69063928			
$\text{NonEMU}_{it} EMU_{jt}$	original - 0	540543429	52973118885	23121099490	114442605,6	1189480020	
	modified - 1	509425397	48026423207	25780271248	71604569,33	705701680,1	
	% change	-5,756805	-9,33812428	-11,50106101	-37,4318953	-40,6714137	
$\text{Civil liberty(medium)}_{it}$	original - 0	540543429	52973118885	23121099490	114442605,6	1189480020	
	modified - 1	451347034	42462821056	18947481098	179369970,6	1856509395	
	% change	-16,50124	-19,8408137	-18,0511242	56,73356067	56,07739217	
$\text{Civil liberty(medium)}_{jt}$	original - 0	540543429	52973118885	23121099490	114442605,6	1189480020	261467591,4
	modified - 1	591521579	58249961618	27400436571	25525351,83	248258513,9	76638477,1
	% change	9,4309072	9,961359354	18,50836325	-77,6959361	-79,1288202	-70,6891104
$\text{Civil liberty(low)}_{jt}$	original - 0	540543429	52973118885	23121099490	114442605,6	1189480020	
	modified - 1	2194980129	245443278588	61291532801	442678813,2	5586761754	
	% change	306,06915	363,3355252	165,0891789	286,8129453	369,6810086	

The 1% increase is calculated from the original value of the independent variables and then adjusted using the logarithm.

Source: Own processing

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