

ASSESSMENT OF CHANGES IN COUNTRY RISK CLUSTERING OF THE EU COUNTRIES

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Abstract: The paper describes country risk assessment from the investment perspective. We provide a detailed literature review of country risk, its definition and specific aspects. We also describe and test the significance of selected political and economic factors using panel data regression. We conclude the GDP per capita, inflation, unemployment, gross government debt, current account balance, international investment position and political control index of corruption and the rule of law are the main factors influencing country risk in our analysis. Using the clustering Ward method, we define groups of the similar EU countries from the perspective of risk and changes within them in the period of one decade. We also analyse whether these countries fulfil specific assumptions for investing.

Keywords: country risk, sovereign risk, political risk, economic risk, clustering, risk clusters.

1 Introduction

All business transactions involve some degree of risk. However, when trading transactions are carried out internationally, they pose additional risks that do not occur in domestic transactions. As mentioned by Meldrum (2000) these additional risks, called country risks, usually include risks arising from different economic structures, policies, socio-political institutions, geographies and currencies of individual countries.

Bouchet et al. (2003) extended that the concept of country risk originated in a period when decolonization occurred and newly created countries experimented with new political autonomy. More and more companies took up opportunities abroad and gradually increased their presence in foreign markets. According to Nath (2008) the increase in the flow of capital to developing countries has led to an increase in the risk exposure of creditors and investors. As discussed by Damodaran (2003), investors in developing countries expect to be rewarded with higher returns, but they are clearly exposed to the political and economic turmoil that often characterizes these markets or market landscape. Country risk analysis is therefore extremely important for international lenders and investors.

2 Literature review

The expansion of business across national borders requires the identification, assessment and analysis of the overall risk to which the economic subjects are exposed. Country risk analysis is the first step in the international portfolio building process. Asiri (2014) discusses that country risk is the result of political and economic factors, so it is very important to identify these factors. Hudakova and Dvorsky (2018), Dulova Spisakova et al. (2017) and Haviernikova and Kordos (2019) also discuss specific aspects of risk in general. Kosmidou et al. (2008) provide a detailed analysis of specific statistical approaches in use for country risk analysis, as well as variables affecting country risk.

In general country risk is largely influenced by political factors. But as discussed by Hoskisson et al. (2000), in a business context, country risk has a negative impact on the performance of a company due to unexpected changes in significant variables. They relate to any potential or actual change in the political

system, civil or external warfare. They are related to certain events, such as expropriation, devaluation, but also include any democratic development that may distort foreign trade. Such incidents have a wide range of negative impacts on businesses, ranging from loss of opportunity on the one hand to overall hedging of business assets on the other. At the empirical level, there is a long history of studies on individual risk factors (Leitner et al., 2015). Political risk measures the effects of political stability on attracting foreign companies, the level of democracy on losses in international businesses and the effects of bureaucracy on attracting international business activities. Authors, Leitner and Meissner (2016) perceive political risk as a result of government interference in business operations.

Miller (1992) argues that social insecurity may be a precursor to political insecurity. The risk of ruling policy covers any unexpected harmful measures for foreign companies taken by local authorities. These include expropriation respectively nationalization, breach of contract, foreign exchange controls, trade restrictions or trade agreements that might favour some foreign competitors over others. The literature suggests that country risk has a direct impact on costs, borrowing and borrowing, as it reflects the likelihood of non-payment of the country's claims.

Teixeira et al. (2008) discuss the country risk is a measure linked to the likelihood of a country's failure and is caused by events that may at least to some extent be under government control but are certainly not under the control of a private enterprise or individual. In quantitative terms, country risk is represented by the difference in return between risky and non-risky assets, which in turn depends on general liquidity conditions in international markets and the behaviour of international investors, the degree of risk aversion and the risks attributed to them by individual assets.

Cosset et al. (1992) defined the country's risk as the probability that a country would not be able to generate enough foreign exchange to pay its debt to foreign creditors. They stressed the need to define country risk in a broader context that more perfectly represents the multidimensional nature of country risk. According to Bouchet et al. (2003) country risk may be triggered by a number of country-specific factors or events. In fact, three types of events can cause country risk, namely political events, economic factors and social factors. Country risk is the revelation of the loss of cross-border credit as a result of events that are more or less under government control.

According to Teixeira et al. (2008) basically, country risk has two components: domestic and external. Domestic risk refers to specific country risk determinants that are related to economic bases, such as the fiscal and balance of payments situation, stocks of international reserves, real economic growth rates and inflation rates. External risk, on the other hand, encompasses all global factors, which in particular include the risk-free interest rate, the contagious effects of the financial crisis and the international risk aversion of investors.

Country risk refers to investing in a country where the risk is dependent on changes in macroeconomic and business environments. Also, increasing globalization has substantially increased investor exposure to events-related risks in different countries. This implies that international investment requires greater attention to risk analysis and risk hedging. The authors, Aboura and Chevallier (2015) have devoted themselves to this very issue. Their motivation was to propose an empirical methodology to create a cross-volatility index that would reflect the main sources of risk for the selected country. This approach, based on the DCC model, requires the inclusion of all sources of risk arising from the country's financial markets. The authors decided to apply the model to the US economy by creating an aggregate volatility index composed of implied volatility indices

that characterize the capital market, the foreign exchange market, the fixed income market and the commodity market.

The analysis consisted of incorporating each source of risk arising from the financial markets for the country and involved two steps. The first step was to analyse the main components that isolate the main components from a given series so that these components correspond to each other. In a second step, the authors considered a multidimensional DCC model to explore the main links between the individual components of the index. The model was applied to the US economy by creating a volatility index composed of an implied volatility index that characterizes the stock market, foreign exchange market, fixed income market and commodity market. It turned out that up to 75% of the aggregate value came from the commodity market, with an average cross-volatility index of around 22%. This new methodology is attractive to risk managers as it provides each investor with a unique volatility index to hedge against any country risk.

Castellanos et al. (2004) dealt with country risk and, in their paper, tried to determine whether countries with similar characteristics could be classified into homogeneous groups depending on variables considered to be most relevant in the perception of country risk. They also wanted to determine, by means of discriminatory analysis, whether the effects of variables relevant to discrimination between groups were the same or different. They used cluster analysis to integrate countries into homogeneous groups, involving 149 countries and the Euromoney-site's variables affecting country risk.

The outcome of the analysis clearly confirmed the existence of four groups to which homogeneous groups of countries within each group were linked, and also showed statistically significant differences between groups.

Based on the analysis, the most significant sets of variables used to differentiate the groups emerged were quite different. The first indicator, which distinguished the first group of countries from the others, was primarily access to bank loans and credit classifications. The first group came countries such as USA, Canada, Switzerland, Norway, or Slovenia. This group of countries was characterized by a low level of indebtedness, with very low but no political risk, high return on investment, and also had no problem in accessing financial markets. Egypt, Mexico, Argentina and for instance Thailand was the second group of countries with a homogeneous country risk. This group was characterized by an average value of economic performance and political risk. External debt indicators were a major problem for this group of countries because they had a relatively higher average value. Countries also had problems accessing international bank loans. In the third group were countries such as Romania, Venezuela, Zimbabwe or Vietnam. This group, based on rating agencies' ratings, had a lower rating compared to the countries in the previous groups. The level of late and unpaid interest was also high. In the fourth group came the other countries such as Iraq, Nicaragua, Cuba, or Albania. Countries belonging to the fourth group showed the worst level of economic indicators and political instability. The level of indebtedness of countries was also on the last place. The result points to the fact that external debt problems are a very bad sign when entering international financial markets for any country.

Political risk, as part of country risk, is commonly considered to be one of the main drivers of emerging stock markets. Earlier assumptions about the impact of political risk on returns on the stock markets were mainly unofficial, as it is difficult to quantify political risk. The authors, İlikzerli and Ülkü (2010), in their scientific paper, analysed the impact of political risk on trading with foreign partners on the newly established and respected markets emerging stock market using quantified values of political risk using the VAR method. Another contribution of this document was to provide an analysis of the impact of political risk on the trade of foreigners in different sectors, as different sectors have different sensitivity to political risk.

Based on the analysis, they found that most of the changes in policy risks were valued within the current month, while the response to innovation was slower. The response of individual foreign investors to changes in political risk in the various industrial portfolios differs, in particular, from the sensitivity of industry to market factors. They perceive positively changes in policy risks in sectors such as that are sensitive to market factors. Foreign partners show uncompromising trading due to changes in political risk in the food and beverage sector. Given that returns in the food and beverage sector are positively related to political risk, the results of the analysis indicated that foreign investors are not following the crowd or pursuing a feedback strategy. The authors compared the reaction of domestic and foreign investors, finding that domestic investors are trading in the opposite direction with shocks in the area of political risks, in areas that are more sensitive to market risk. Simply said, domestic investors provide liquidity to foreign investors who trade on information. This suggests that there is a significant difference between foreign and domestic investors' response to political risk. The difference is noticeably important in the tourism sector, where foreigners respond strongly to political risk, while domestic investors are largely concerned with it.

Roggi et al. (2017) also dealt with country risk. The aim of their scientific paper was to propose new measures for effective exposure to companies operating in emerging markets. They proposed seven new approaches and a revised CAPM model for emerging markets. They tested historical exposure rates of companies in Latin American countries in emerging markets according to the Emerging Markets Latin America Index (MSCI) and the American multinationals listed in the Dow Jones Industrial Average.

The authors have developed seven new approaches to estimate the country's risk exposure: future, relative, industrial, retrospective, real lambda, companies with effective risk premiums and companies with real risk premiums. These seven methods are the implementation of a simplified approach to equity costs. They used twelve-month free cash flows, equity data for analysis, and were tested on 58 Latin American companies and 26 multinationals in the US. The results showed that, in 2013 and 2014, the additional return on investment by investors in emerging Latin American markets was on average higher than the country's risk premium from existing measures. On this basis, it has been shown that the use of new approaches to estimate an enterprise's exposure to country risk would, on average, lead to higher cost inequalities and lower company values. The results of the analysis conducted with US multinationals have shown that it would not be appropriate to add any risk to the valuation of multinationals listed in the US. As multinationals have production facilities in high-risk countries, investors perceive a higher risk and therefore require an additional mark-up, which must be taken into account when calculating equity costs. With the new measures, it was possible to obtain an estimate of the amount of premiums required by investors in the past, an estimate of the actual share required and of premiums related to future growth estimates. The big advantage of using the revised CAPM was that equity costs reflect the Company's effective exposure at country risk without over- or underestimation, as is the case with other existing approaches.

Interesting point of view from perspective of economic freedom brought Mura et al. (2017). They consider the level of the economic freedom in the country may have a significant influence on the economic security and the economic security of residents.

3 Methodology and data

The main aim of the paper is to find similar EU countries from the perspective of risk and changes within them. At the beginning, we specify and test the significance of individual political and economic factors on the country's risk using an econometric model. We analyse all EU countries, specifically Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark,

Estonia, Finland, France, Greece, Netherlands, Ireland, Lithuania, Latvia, Luxembourg, Hungary, Malta, Germany, Poland, Portugal, Austria, Romania, Slovakia, Slovenia, United Kingdom, Spain, Sweden and Italy. We use individual political and economic indicators for the period 2005 to 2017 with annual frequency, using datasets of the World Bank, the International Monetary Fund, OECD, WITS, Eurostat and The Global Economy. We use longitudinal or panel data for twenty-eight EU countries and seventeen annual periods. The appropriate approach applied for the data structure is panel regression. That enables us to determine and select significant political and economic variables we will use for further specification of similarities among EU countries. Using the clustering Ward method, we define groups of the similar EU countries from the perspective of risk and changes within them in the period of one decade.

The general model that we want to estimate takes the following form:

$$CR_{it} = \beta_0 + \beta_1 GDPpc_{it} + \beta_2 GDP_{it} + \beta_3 GNIpc_{it} + \beta_4 GFCF_{it} + \beta_5 CPI_{it} + \beta_6 UNEMPL_{it} + \beta_7 Debt_{it} + \beta_8 IntR_{it} + \beta_9 CuA_{it} + \beta_{10} IIP_{it} + \beta_{11} EX_{it} + \beta_{12} PSI_{it} + \beta_{13} GEI_{it} + \beta_{14} COC_{it} + \beta_{15} IFI_{it} + \beta_{16} WR_{it} + \beta_{17} RLI_{it} + \beta_{18} BFI_{it} + \mu_{it}$$

where *CR* stands for country risk expressed as a rating based on the ratings of the major rating agencies - Standard & Poor's, Fitch and Moody's. We have transformed the rating scale into numerical expression, assigning 20 to the best rating (highest quality) and 1 to the worst rating (very high probability of failure). There is a negative correlation between rating and country risk in the sense that when a country's risk decreases in the analysed country, it leads to a rating increase. This is important to avoid misinterpretations.

The explanatory variables in use are:

gross domestic product per capita expressed in dollars (*GDPpc*); growth of gross domestic product, year-on-year change in percentage (*GDP*); gross national income per capita expressed in dollars (*GNIpc*); gross capital formation, year-on-year change in percentage (*GFCF*); consumer price index on annual basis and expressed in percentage (*CPI*); unemployment rate as percentage of total workforce (*UNEMPL*); gross government debt expressed as percentage of GDP (*Debt*); international reserves (including gold) expressed in dollars (*IntR*); balance of payments current account expressed as percentage of GDP (*CuA*); international investment position expressed as percentage of GDP (*IIP*); *EX* export growth rate expressed on year-on-year basis in percentage (*EX*); political stability index (*PSI*); government efficiency index (*GEI*); corruption control index (*COC*); index of investment freedom (*IFI*); war risk index (*WR*); rule of law index (*RLI*); business freedom index (*BFI*); and random component.

The analysis will be based on an econometric model with the explanatory variables in the models being the same at the beginning, only the explained variable, the country's risk expressed by rating will be changed. In the first model (model M) Moody's rating as the country risk dependent variable is used. In the second (model SP) S&P is used and as the last initial model Fitch rating is used (model F)

Due to the presence of multicollinearity in the model, we had to reduce explanatory variables that were strongly correlated with each other. After editing the previous original model we get the following model:

$$CR_{it} = \beta_0 + \beta_1 GDPpc_{it} + \beta_2 GFCF_{it} + \beta_3 CPI_{it} + \beta_4 UNEMPL_{it} + \beta_5 Debt_{it} + \beta_6 CuA_{it} + \beta_7 IIP_{it} + \beta_8 EX_{it} + \beta_9 PSI_{it} + \beta_{10} COC_{it} + \beta_{11} IFI_{it} + \beta_{12} RLI_{it} + \mu_{it}$$

As we mentioned, we are working with cross-sectional data for EU countries, where we also see how they change over time. When using panel data, we can generally consider two types of models, namely the fixed effect model and the random effect model. We applied the Hausman test and decided which model suited our conditions.

The Hausman test results showed that the p-values in each considered model are less than the established significance level $\alpha = 0.05$, thus rejecting the null hypothesis and accepting an alternative hypothesis claiming that it is preferable to use the fixed effect model.

In all three variants of the model, all assumptions put on the panel data models, so we eliminated model deficiencies by applying the robust Allerano variation-variation matrix used in the fixed effect model. For the further evidence on Allerano matrix, see Croissant and Millo (2008).

Table 1 Significance of explanatory variables in model M

	estim. β	p-value
GDPpc	2.881e⁻⁰⁵	0.039 *
GFCF	7.967e⁻⁰³	0.144
CPI	-0.140	0.020 *
UNEMPL	-0.102	0.011 *
DEBT	-0.079	<0.001 ***
CuA	0.041	0.078 .
IIP	0.013	0.010 **
EX	-8.834e⁻⁰³	0.198
PSI	0.150	0.785
COC	-0.575	0.043 *
IFI	0.011	0.322
RLI	4.347	<0.001 ***
R²	0.782	
R² adj.	0.778	

Significance level: 0 '****' 0,001 '***' 0,01 '**' 0,05 '*' 0,1 '.' 1

Source: calculated in R program.

Among the three models as the most appropriate for assessing country risk follows the first model (model. M) with the desired pointer credit rating by Moody's evaluation, by which we can explain about 78% of the total variability of the indicator. The other two models are able to explain the smaller percentage of the total variability of the indicator. They also show a smaller number of statistically significant variables compared to the first model. For this reason, only the first model (model M) is considered for the next analysis.

According to our investigation, the GDP per capita, inflation, unemployment, gross government debt, current account balance, international investment position and political control index of corruption and the rule of law are the main factors influencing country risk. The factors are these that will form the basis of the following part of the analysis. Our aim is to classify all the twenty and eight countries of the European Union into homogeneous groups with a certain degree of country risk, based on important political and economic factors. We also aim to compare the change over time, and we have chosen to use all of the variables mentioned for 2008 and 2017 for this purpose. Simply, we want to find out how the classification of the EU countries into individual risk groups has changed over the selected time period. We also want to map in which countries currently we have the best prerequisites to realize investment plans. To identify the position of the EU countries, we used the clustering, also called as cluster analysis.

In the paper we apply the hierarchical agglomerative method. In this method, the entities are in their own separate cluster. Two closest eventually the most similar clusters are then combined. This process is repeated until all subjects or objects are in one of the clusters. Finally, the optimal number of clusters is selected from all cluster solutions. From the hierarchical agglomerative method, we used Ward method. In this method, all possible cluster pairs are combined and the sum of the square distances in each cluster is calculated. Subsequently, the combination that gives the lowest sum of squares is selected. This method tends to produce clusters of approximately the same size. Ward method, as argue by Cornish (2007), is one of the most widely used and popular methods for using cluster analysis. We use dendrogram to visualize the results.

4 Results and discussion

In this part of our paper we present results of our cluster analysis. The significant political and economic variables used by us as inputs are defined in different units of measurement, e.g. GDP per capita is expressed in dollars, while unemployment and others are defined as a year-on-year percentage change. Therefore, we first standardized these variables to eliminate their impact. If we did not standardize the variables, they would be reflected in our analysis with varying importance, and this would result in an overall distortion of the results. Subsequently, we used a hierarchical clustering method, namely the Ward method, to determine the number of clusters with respect to the country and country risk for 2008 and 2017. Using R programming, we created 5 clusters, or so called 5 homogeneous risk groups based on significant economic and political variables for 2008 as well as for 2017. Clusters are shown in the following output from the R program (Figure 1 and 2). In addition, in the description of the figure, there are individual clusters with the assigned EU countries. The dendrograms show that there were changes in individual homogenous risk groups between the monitored period, e.g. from the V4 countries in 2008 Hungary, Slovakia, Poland belonged to cluster number 3, while the Czech Republic to cluster number 4. However, in 2017, all V4 countries are in cluster 2. However, in order to draw conclusions from the analysis in the next section we take a closer look at the characteristics of each cluster.

After the integration of EU countries into individual homogeneous groups in terms of country risk (see Figure 1), we calculated the average, minimum and maximum values of significant economic and political indicators. Based on them we did a breakdown of the clusters and the corresponding average values of these clusters for 2008, when the financial crisis occurred. Using Ward method for clustering we specify five groups of countries in the specific clusters. Belonging of a country to the specific group is following Cluster 1 = Belgium, France, Malta, Germany, United Kingdom; Cluster 2 = Bulgaria, Estonia, Greece, Lithuania, Latvia, Romania; Cluster 3 = Croatia, Hungary, Poland, Portugal, Slovakia, Italy, Spain; Cluster 4 = Cyprus, Czech Republic, Ireland, Slovenia; Cluster 5 = Denmark, Finland, Netherlands, Luxembourg, Austria, Sweden

Cluster 1 has low level of landscape risk. For this cluster is a specific high level of GDP per capita (\$ 41630.84). This cluster is characterized by the second lowest level of inflation at 3.54%. This group of countries is characterized by a relatively high unemployment rate and the current account deficit is negative, but only to a small extent compared to clusters no. 2, 3, 4. Of all the clusters, this cluster shows a positive international investment position, ie foreign financial assets outweigh the liabilities and countries belonging to this cluster act as net lenders to foreign countries. In terms of the Corruption Perceptions Index, countries show a low level of corruption and a high level of rule of law. Cluster 2 has the highest level of country risk. Countries belonging to the cluster have the lowest GDP per capita, also the highest inflation, and the highest deficit of the current account. From the perspective of the political factors, they dispose with the highest level of corruption. In addition, the lowest level of development of the justice system is specific for this cluster. From the analysed countries, this cluster includes countries with the highest level of investor failure.

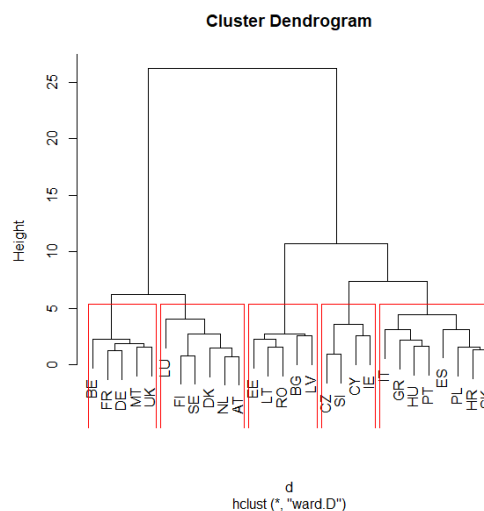


Figure 1 Cluster dendrogram for year 2008. Source: created in R program.

Cluster 3 might be evaluated as a cluster with a medium level of country risk. As countries testify to a high level of corruption, the rule of law index also points to the underdeveloped legal system of countries. Indicators of public debt and international investment position point to a high level of indebtedness of the country. There is also a current account deficit in countries belonging to this cluster. Countries belonging to cluster 4 show the country's medium level of risk. Economic as well as political indicators get moderate or better to say average values among analysed countries. Cluster 5 groups together countries with moderately low country risk. GDP per capita is at the highest level of all clusters, as well as low inflation and unemployment. As regards the indebtedness of countries, they show a very small percentage of indebtedness of total GDP, and have surplus of the balance of payments account. Corruption in the country is minimal and the legal system of countries is relatively high.

Subsequently, we specified EU countries into individual homogeneous groups with a certain degree of country risk for 2017: Cluster = Belgium, Finland, Austria, United Kingdom, Sweden; Cluster 2 = Bulgaria, Czech Republic, Estonia, Lithuania, Latvia, Hungary, Poland, Romania, Slovakia; Cluster 3 = Croatia, Cyprus, France, Ireland, Portugal, Slovenia, Spain, Italy; Cluster 4 = Denmark, Netherlands, Luxembourg, Malta, Germany; Cluster No.5 = Greece.

Cluster 1 has moderate country risk level. This cluster brings together countries that have the second highest GDP per capita. As for the inflation rate, as in other clusters, it is close to 2%. That is because the EU countries have to meet the ECB's inflation target. These countries are characterized by a current account surplus; countries in international trade act as net lenders and show low levels of corruption. Countries in the cluster 2 have medium level of country risk. This cluster contains countries with relatively stable values of economic and political variables. Cluster 3 disposes with the medium level of country risk. Countries belonging to this cluster have relatively low GDP per capita, inflation above 2%, and relatively high indebtedness. They act as net debtors in international trade. On the contrary, they show a current account surplus. Based on political indicators, these countries also have shortcomings, particularly in the area of corruption. Cluster 4 is the one with the lowest level of country risk. From the point of view of investment intentions, these countries fulfil all conditions. They have the highest GDP per capita, low inflation and unemployment rates. They have the highest balance of payments surplus and financial assets outweigh the liabilities. In terms of the political environment, they are also attractive to investors, mainly due to the high level of corruption control and the effective functioning of the rule of law. At the end cluster 5 has high level of landscape risk. This cluster is the opposite of cluster 4, namely

the highest unemployment of all clusters, the highest level of public debt. As the only cluster has a current account deficit, financial assets also highly outweigh the liabilities; it means that the countries are net debtors. The political background of the countries is unsatisfactory due to the high corruption and low level of development of the legal regime.

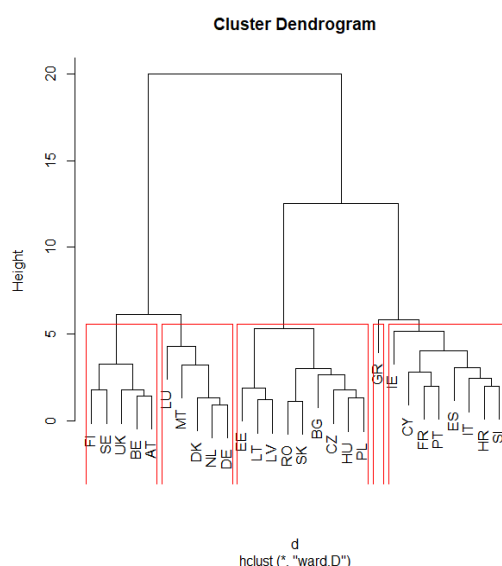


Figure 2 Cluster dendrogram for year 2017. Source: *created in R program*.

Based on the average values, we estimated the corresponding level of country risk in each cluster for 2008 and 2017. Subsequently, we also illustrated the clustering result using scatterplot, where the individual axes are made up of two main components. Component 1 of Figure 3 and 4, which describes economic factors such as per capita GDP, inflation, unemployment, gross public debt, current account balance and international investment position. The component 2 in Figure 3 and 4 corresponds to the political factors of the corruption control variables and the rule of law index. Scatterplot is divided into 4 quadrants, with clusters with the highest level of country risk in the lower left quadrant due to the economic and political instability of the countries. In 2008, this category included countries such as Romania, Bulgaria and the Baltic States.

However, based on our analysis, only Greece currently belongs to the country with the highest level of country risk. In the theoretical part, we mentioned that Greece, when joining the Eurozone, published misleading information regarding compliance with the Maastricht criteria, namely the size of the reported sovereign debt. At present, the country still has a high level of indebtedness, therefore, based on the analysis carried out, investors should consider carrying out their investment activity in that country.

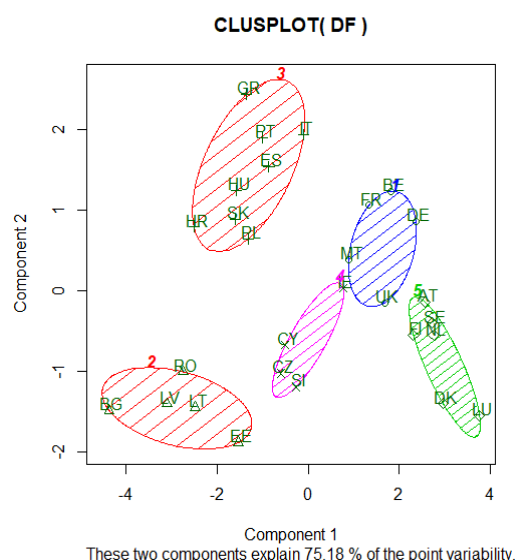


Figure 3 Scatterplot for the particular clusters - year 2008
Description: Cluster 1 = low level of landscape risk; Cluster 2 = high level of landscape risk; Cluster 3 = medium level of country risk; Cluster 4 = the median level of country risk; Cluster 5 = moderate country risk level.
Source: *created in R program*.

In the upper right quadrant of the scatterplot in Figure 3 are clusters inserted, there are countries that show the best rating in terms of country risk. In 2008, this cluster was represented by countries such as Germany, Belgium, France, Malta, the United Kingdom. Countries such as Germany, Malta and Netherlands, Luxembourg and Denmark have maintained this position. For investors, these countries are best placed to realize their investment plans.

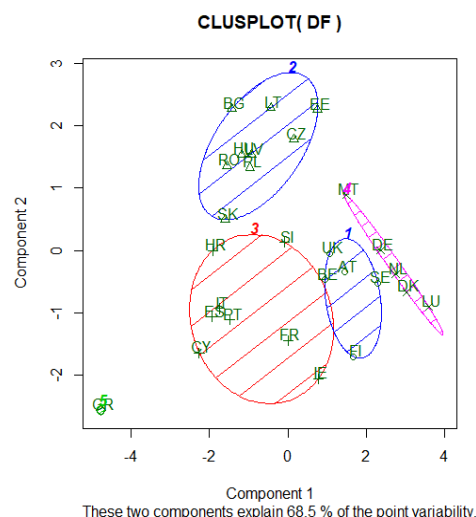


Figure 4 Scatterplot for the particular clusters - year 2017
Description: Cluster 1 = moderate country risk level; Cluster 2 = the median level of country risk; Cluster 3 = medium level of country risk; Cluster 4 = low level of country risk; Cluster 5 = high level of country risk.
Source: *created in R program*.

Based on our analysis regarding the V4 countries, Slovakia, Poland and Hungary in 2008 belonged to a cluster with a medium level of risk, while the Czech Republic belonged to a cluster with medium level of country risk. Currently, all V4 countries belong to a mid-range burst with countries such as Romania, Bulgaria and the Baltic States. It can be stated that relatively optimal conditions for investment intentions are created in these areas. Although the level of corruption in these

countries is higher, we have found, based on previous analysis, that there is a negative dependence between country risk and corruption. However, in addition to political and economic factors, it is necessary to examine the investment market in the country and to map the competitiveness of the business.

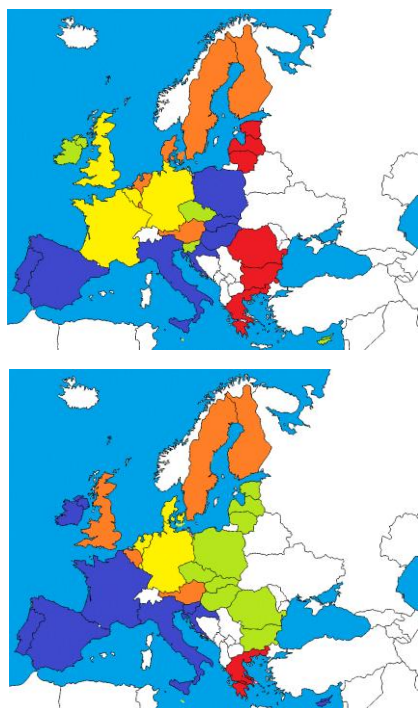


Figure 5 Geographical breakdown of countries by risk. Year 2008 (upper part) and 2017 (lower part). Source: created in R program.

In the second part of the analysis, our aim was to group all European Union countries (28) into homogeneous groups with some degree of country risk, using cluster analysis based on significant political and economic factors. We also wanted to compare the change over time, using all of these variables for 2008 and 2017 for these purposes. Figure 5 shows the individual investment areas with the appropriate level of country risk. Red indicates a high level, purple a medium high, green a medium high, orange a medium low, and yellow a low country risk. The first map shows the distribution of countries for 2008 (upper part of Figure 5) and the second map for 2017 (lower part of Figure 5). The maps show some differences between the reporting period. Based on our analysis during the Financial crisis in 2008, the most risky investment areas were reported by the Baltic States, Bulgaria and Greece. By contrast, countries such as Germany, the United Kingdom, Belgium and France were not affected by the major economic crisis, nor were investors affected by the adverse effects of the crisis.

At present, based on cluster analysis using economic and political factors affecting country risk, we have included EU countries in five investment areas with the appropriate level of country risk. We have identified which countries are best placed to realize investment plans. Based on the 2017 map (lower part in Figure 5), we can conclude that it is best for investors and creditors to place their capital or start their business in countries like Malta, Germany, Luxembourg, the Netherlands and Denmark. These countries showed the best economic and political conditions in all EU countries. If investors start their business in these countries, they can expect profitable and profitable investments. The Baltic States, the V4 countries, together with Bulgaria and Romania, represent a medium level of country risk. Thus, if investors decide to place their capital in these countries, they should carry out additional market and competitiveness research in the country so that they can make a rational decision whether or not to enter the market. Conversely,

the country of Greece, which is based on our analysis identified as the most risky area for carrying out investment plans, investors and creditors should be very cautious and not enter the country's market because of the high probability of default and unpredictable situation in the country.

5 Conclusion

We provide a detailed literature review of country risk, its definition and specific aspects. We also describe and test the significance of selected political and economic factors using panel data regression. We conclude the GDP per capita, inflation, unemployment, gross government debt, current account balance, international investment position and political control index of corruption and the rule of law are the main factors influencing country risk in our analysis.

Using the clustering Ward method, we define groups of the similar EU countries from the perspective of risk and changes within them in the period of one decade. Based on cluster analysis, we have included EU countries into five homogeneous groups with appropriate country risk levels for 2008 and 2017, using significant variables identified by regression analysis of panel data. Our goal was to identify change over time and identify which countries are optimal for carrying out risk-safe investment plans.

Based on our analysis, we conclude that the countries of Germany, Luxembourg, the Netherlands and Denmark have the safest environment for the allocation of capital. By contrast, Greece shows the worst economic and political indicators of all EU countries, so creditors and investors should consider entering that country because of the high probability of default and loss.

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