THE IMPACT OF CORRUPTION ON CORPORATE INSOLVENCIES IN THE CENTRAL AND EASTERN EUROPE COUNTRIES

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ABSTRACT

The first studies on corporate insolvencies in developed countries date to the early 20th century. Nevertheless, due to the geopolitical situation and the introduced economic system, in the Central and Eastern Europe countries, the institution of bankruptcy began to function and became the subject of researcher interest in the first half of the 1990s. However, it is important to conduct research into the bankruptcy evolution and the general bankruptcy causes. In almost all cases, the bankruptcy of a company is determined by the simultaneous effect of several causes, which influence different aspects of the company's business. Therefore, it is worthwhile to analyse the impact of corruption on bankruptcy phenomenon. Corruption is a phenomenon widespread almost all over the world, but its level varies from country to country. In addition, there are very large discrepancies from one geographic region to another. If in some countries the impact of corruption is not obvious, in other countries the effects on poverty can be devastating. The effects of corruption on the economic growth have been extensively studied in the literature. To achieve the purpose of the research, we analysed the link between the level of corruption and the corporate insolvencies in the Central and Eastern European countries. Based on the cross-country findings of this paper a lesson for the Central and Eastern European countries can be crucial. It has been identified that the most significant drivers of corporate insolvencies among all the countries in the data set are corruption and lack of freedom of expression, freedom of association, and a free media. These two factors have to be taken into consideration by EU that is actively trying to develop the European framework for restructuring and bankruptcy management.

KEY WORDS

Corporate insolvencies, Corruption, Voice and accountability, Bankruptcy, Institutional quality.

INTRODUCTION

Bankruptcy[1] is an indispensable part of every entity tending to meet the demands of the market economy, irrespective of the activity profile, legal form, dimension and socio-economic space where it activates.

Commissioner for Justice, Consumers and Gender Equality, Věra Jourová in a press release dated November 22, 2016, mentioned about the devastated impact of bankruptcy on business. (http://europa.eu/rapid/press-release_IP-16-3802_en.htm). Thus, the EU is promoting a set of insolvency measures aimed not only for harmonizing the national laws of the EU countries, but also for developing a European framework for restructuring and bankruptcy management. The huge legislative effort at EU level regarding insolvency is represented by:

1) Council regulation (EC) No 1346/2000 on insolvency proceedings (Official Journal of the European Union, Volume I, L160 / 1, Council regulation (EC) No 1346/2000 on insolvency proceedings, p. 143) (https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32000R1346);

2) Proposal for a Directive (Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on preventive restructuring frameworks, second chance and measures to increase the efficiency of restructuring, insolvency and discharge procedures and amending Directive 2012/30/EU -- Strasbourg, 22.11.2016/COM/2016/0723 final - 2016/0359 (COD)), of November 2016, which refers both to preventive restructuring frameworks and to the second chance and measures to increase the efficiency of restructuring, insolvency and discharge procedures (https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2016:723:FIN).

Therefore, it is important to conduct research into the corporate insolvencies evolution and the general bankruptcy causes. In almost all cases, the bankruptcy of a company is determined by the simultaneous effect of several causes, which influence different aspects of the company's business. In addition, the practice has shown that a firm does not fail suddenly; it extends over a very long time.

Corruption is considered the worst and most widespread form of behaviour, perverting public affairs (Conseil de l' Europe 1996:78). Our main concern is that corruption is one of the biggest problem in the Central and Eastern European countries. In this paper, we define the biggest obstacles for Central and Eastern European countries development in a prospect of a cross-country analysis. Thus, the objective of the present research consists in analysing the influence of the level of corruption on the corporate insolvencies, especially the relationship between corruption and business. A correlation-regression analysis was conducted on a large sample of 15 countries over the period 2013-2017. Our findings suggest that the most significant drivers of corporate insolvencies among all the countries in the data set are corruption and lack of freedom of expression, freedom of

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[1] In this paper the terms 'bankruptcy' and 'insolvency' are synonyms, and they refer to the procedure of general distrain of legal persons property, excluding private bankruptcies

association, and a free media. These two factors have to be taken into consideration by EU that is actively trying to develop the European framework for restructuring and bankruptcy management.

1. LITERATURE REVIEW

The problem of bankruptcy and the factors that determine it are widely analysed in literature. It is eloquent for external and internal users to understand the causes of corporate insolvencies, in order to implement measures to increase the efficiency of restructuring, insolvency and discharge procedures. The literature on bankruptcy has typically focused on the prediction of bankruptcy risk. Therefore, it is worthwhile to analyse the causes of bankruptcy. To our knowledge, relatively few strands in the literature have investigated the influence of general environment factors on levels of bankruptcies, and the results are inconsistent.

Ooghe and De Prijcker (2006) presented a general bankruptcy cause model that distinguish four main types of failure processes: unsuccessful newly established companies, ambitious growth companies, dazzled growth companies and gradual deterioration of established companies. Their findings of bankruptcy causes were based on a case study of bankrupt of 12 Belgian companies. Nevertheless, these causes can be generalized as universal bankruptcy causes. In addition, Ooghe and Waeyaert (2004) have developed a "model of conceptual failure" that distinguish five intertwined groups of internal and external causes of corporate insolvencies. These groups are: general environment (economic, technological, political and social factors, the behaviour of the government), immediate environment (interactions with stakeholders: customers, suppliers, competitors, banks, credit institutions and stockholders), characteristics of management or the entrepreneur (management's motivation, qualities, skills, and personal characteristics), corporate policy (marketing and sales, operations, administrative, strategy and investments, financial and human resources, management and corporate governance) and company's characteristics (size, maturity, and industry).

 Euler Hermes Kreditversicherung and the Centre for Insolvency and Reorganization at the University of Mannheim published a comprehensive study of bankruptcy causes in Germany in November 2006. Another analysis of bankruptcy causes in Germany is based on the studies of Wieselhuber & Partner. The research of Wieselhuber & Partner confirmed and approved Euler Hermes Kreditversicherung and the Centre for Insolvency and Reorganization study results. The two presented German studies have coherent results and denote mismanagement as a primary cause of corporate insolvencies in Germany.

Branko Novak and Domagoj Sajter, 2007, have conducted some researches regarding the bankruptcy in Croatia. They revealed that in Croatia, like in the rest of Europe, the biggest responsibility for success, as for a failure, is due to the management. Thus, researchers notifies most of the failure causes of Croatian companies in two distinctive areas: a) external causes: outside the company itself (in its general and/or immediate surrounding, and b) internal causes: because of management actions (Branko Novak and Domagoj Sajter, 2007).

Also worth mentioning are the models of Dyrberg, Lee and Grunert (Dyrberg 2004; Lee et al. 2003; Grunert et al. 2005), the main advantage of which is that these models are related to macroeconomics factors, business sector or corporate governance.

In Central and Eastern Europe, due to, among other factors, the geopolitical situation and the introduced economic system, the institution of bankruptcy began to function and became the subject of researcher interest in the first half of the 1990s. According to literature analysis made by Błazej Prusak (Błazej Prusak, 2018), it means that even though the institution of bankruptcy was introduced in Central and Eastern Europe relatively late, in terms of research on enterprise bankruptcy risk forecasting, some countries currently do not depart from global patterns. The literature review shows that the best world practices are reflected in the research provided in Poland, the Czech Republic and Slovakia. Advanced models have also been developed in Estonia, Hungary and, to smaller extent, Ukraine. In Romania and Lithuania, mainly classical techniques were used to create bankruptcy forecasting models, using only financial indicators. Bulgaria, and Latvia were ranked the weakest. In these countries, there have been single attempts to develop national models using the simplest statistical techniques and applying only financial indicators as explanatory variables (Błazej Prusak, 2018) .

Emerging from these inconclusive findings, questions may be asked on whether the higher level of corruption will create opportunities for bankruptcy. According to Transparency International, corruption is a problem all over the globe and it is threatening economic growth for both developed and developing countries. In accordance with economic literature, one of the major obstacles for doing business is corruption as it raises costs of business activity and tends to drive legitimate entrepreneurship underground (Mueller, 2003 : 544). Additionally, as has been noted by World Bank, evidence from private sector assessments suggests that corruption in the form of bribing can prevent firms from growing. Therefore, it can be assumed that a higher level of corruption could increase number of bankruptcies. Consequently, it is possible to obtain some direct or indirect links between various aspects of corporate insolvencies and corruption and the following hypothesis can be made:

Hypothesis 1. Increasing level of corruption is associated with a greater number of corporate insolvencies.

The study of Aidt (2009) notifies that corruption is a "significant hindrance for sustainable development". According to another group of researchers, in a long run, corruption diminishes competitiveness of businesses, giving some firms many illegal advantages and forcing others out of the market. Consequently, the companies that follow the rules and obey the laws are not able to survive (Institute of Applied Humanitarian Research, 2012 a; 2012b).

2. DATA AND METHODOLOGY

2.1 Variables and data sources

The dependent variable: Corporate insolvencies

Insolvency legislation varies from one country to another. There are differences in the way of small firms liquidations (some firms are simply erased from commercial registers), as well as differences in how bankruptcy of self-employed persons are handled in insolvency statistics. That is why, the number of corporate insolvencies were selected from the Creditreform study: Corporate insolvencies 4 in Europe, 2017/18.

The independent variable: Corruption.

To measure corruption, the Control of Corruption index and Corruption Perceptions Index provided by World Bank data and Transparency International were used. CPI is the most widely used indicator of corruption. CPI is now calculated for about 175 countries. Based on the new CPI methodology, countries are nowadays ranked from zero (highly corrupt) to a hundred (very clean), but none of the countries score a perfect one hundred. Overall, CPI has assumed a central place in the researches on the causes and consequences of corruption, but it is still limited in scope (Sivula Inna, 2015). CPI does not give full information about corruption in a country because it is capturing corruption perceptions only in the public sector from business people's and country experts' point of view. A year-to-year comparisons of CPI can be difficult because a country's rank can easily change due to changes in the list of analysed countries (Rohwer, 2009). Moreover, the rank of a country provided by CPI is hard to transform into a real distance between countries which hinders the cross-country analysis from year to year (Malito, 2014).

Control of Corruption index is more comparable over the years in comparison to Corruption Perception Index. The information on perceptions for this indicator World Bank summarizes from available data sources, such as surveys of households and firms, commercial business information providers, non-governmental and public sector organizations. The data is collected, rescaled from zero to one, then it is constructed into a weighted average of the individual indicators using a statistical methodology called "unobserved components model (UCM)". Rohwer (2009) remarks that this type of model is used because corruption is unobservable, so it can be only approximated by aggregating the scores from given indicators The World Bank reports the Control of Corruption indicator in standard normal units, ranging from -2.5 to 2.5. Control of Corruption index measures corruption in both public and private sectors.

The present study investigates the influence of corruption on the level of corporate insolvencies. However, income and institutional quality of a country are also very important factors, and they should be controlled as well.

Income

GDP and GDP per capita, reflects the economic root. Higher values are corresponding to higher level of development. The measure of GDP per capita is taken from the World Bank database. The values are shown in current USD and calculated by dividing gross domestic product of each country by their midyear populations. A rise in GDP per capita displays growth in the economy that implies higher standards of living.

According to the empirical conclusions developed above, the following hypothesis was made:

Hypothesis 2. Increasing income of a country can be associated with a decreasing number of corporate insolvencies.

GDP is used to represent the level of a country evolution and welfare. At the same time, GDP per capita is utilised to represent the income of a country.

Institutional quality

Some research (Park & Blenkinsopp 2011, Fritzen et al., 2014) noted that in order to ensure a good functioning of the state it is important to ensure a high level of trust in the governing institutions. The better institutional quality, the more developed businesses, the less number of bankruptcies.

In order to measure the quality of public governance, we will use its five dimensions, determined by the World Bank, namely: Government Effectiveness, Regulatory Quality, Political Stability and Absence of Violence/Terrorism, Voice and Accountability, and the Rule of Law. For each size, the World Bank calculates scores ranging from -2.5 (weak) to 2.5 (strong) in governance performance. All these five indicators are rather aggregate measures.

The *Governance Efficiency* indicator reflects the public's perception of the quality of public services and the degree of independence from political pressures, the quality of government policies and the credibility of its commitment to adopting these policies.

The *Regulatory Quality* implies perceptions about the government's ability to formulate and implement robust policies and regulations to promote and stimulate private sector development (including perceived fiscal pressure imposed by excessive regulation).

The *Rule of Law* indicator reflects the extent to which agents trust and respect the rules of society, and in particular, the quality of contract execution, property rights, police, and courts, as well as the likelihood of murder and violence.

The Voice *and Accountability* captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

The *Political Stability and Absence of Violence/Terrorism* measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism (http://info.worldbank.org/governance/wgi/#doc).

Another overall indicator that measures the efficiency of government regulation of business is *Business Freedom*. The quantitative score is derived from an array of measurements of the difficulty of starting, operating, and closing a business. The business freedom score for each country is a number between 0 and 100, with 100 equalling the freest business environment. The score is based on 10 factors, all weighted equally, using data from the World Bank's Doing Business study.

Consequently, the following hypothesis can be formulated:

Hypothesis 3. A higher level of institutional quality diminishes the level of corporate insolvencies.

As a result of these conclusions, we purpose to analyse the variation in corporate insolvencies to the simultaneous influences of corruption, institutional quality and richness of the country. Therefore, the following hypothesis was proposed:

Hypothesis 4. Increasing level of corruption, lower institutional quality and decreasing level of wealth of a country can determine a higher level of corporate insolvencies.

The utilised variables and their data sources can be seen in Table 1.

Table 1. Variables and data sources

Variable Name	Estimator	Description	Source
Corruption	Corruption Perceptions Index (CPI)	We deal with the country rankings ranging from 1 (lowest level of corruption) to 185 (highest level of corruption)	Transparency International
	Control of Corruption index (CC)	Rating on a 0-100 scale, where higher values are corresponding to better outcomes.	World Bank
Income	GDP and GDP Per capita (GDP)	GDP per capita (current US$). GDP per capita is gross domestic product divided by mid-year population	World Bank
Institutional quality	Good Government Effectiveness (GE), Regulatory Quality (RQ), Political Stability and Absence of Violence/Terrorism (PS), Voice and Accountability (VA), and the Rule of Law (RL)	They reflect the perceptions of the quality of public services, their ability to produce and implement good policies and deliver public goods. It ranges from -2.5 (weak) to 2.5 (strong) in governance performance	World Bank, The Worldwide Governance Indicators
	Business Freedom (BF)	The score for each country is a number between 0 and 100, with 100 equalling the freest business environment.	World Bank's Doing Business study

(Source: elaborated by authors)

Method

In order to determine the correlation between corruption and corporate insolvencies, it is necessary to create a model combining the influence of relevant corruption (economic, political and social factors, the behaviour of the government) indicators on corporate insolvencies. For this purpose, the correlation-regression analysis was used. This method allows assessing the influence of risk factors or confounding variables on the outcome variable and the degree of linkage between the dependent variable and the independent factors.

In the correlation-regression analysis, we observe how the dependent variable changes according to the modification of one or more causal variables. Because any economic phenomenon is influenced by a large number of factors, in most cases, multifactorial models are used, which gives us the opportunity to quantitatively assess the form and intensity of the relationship between the result and the factors of influence (x_1, x_2, …, x_n). In this case, the following factorial equation model will be expressed:

$$y_{x_1, x_2,...x_n} = a_0 + a_1 x_1 + a_2 x_2 + ... + a_n x_n \; , \tag{1.1}$$

Where:

a_0 – the intercept point of the regression line and the y axis;

a_1, a_2, … an – the regression coefficients expressing the mean change in the endogenous characteristic y caused by the modification of the exogenous characteristic x_i by a unit, provided that the influence of the other factors in the mathematical model is taken into account and fixed at the average level;

x_1, x_2, … x_n –independent variables.

In the model, the coefficient of determination (R) shows the qualitative linkage between endogenous and exogenous characteristics. The higher the value of this coefficient to 1, the more (the high) the correlation between the characteristics (Table 2).

Table 2: The assessment of correlations among parameters

R	CORRELATION	R	CORRELATION
0	Missing	0,5-0,7	Remarkable
0-0,2	Very weak	0,7-0,9	High
0,2-0,3	Weak	0,9-0,99	Very high
0,3-0,5	Moderate	1	Functional

Source: Petre D.A., Metode de determinare şi analiză a eficienţei utilizării capitalului firmei

The present study sample consists of 15 countries (8 developed and 7 developing countries) (M = 15) in the period 2013-2017 (t = 5). The study included the Central and Eastern European countries, namely: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Ukraine and Republic of Moldova.
The selection of the factors included in the model was made taking into account:

a) the link equation included factors that directly affect the outcome;

b) a total of 71 observations were performed.

In the process of multifactorial model elaboration, to determine the influence of factors on the modification of the resulting indicator, the following endogenous characteristic was examined:

y reflects the number of corporate insolvencies of a country (CI).

In order to show the influence of the considered variables on corporate insolvencies, in the mathematical model the following factors were included:

x_1– Business Freedom (BF);

x_2 - Control of Corruption index (CC);

x_3 - Corruption Perceptions index (CPI);

x_4 – GDP (current US$);

x_5 - GDP per capita (current US$);

x_6 - Good Government Effectiveness index (GE);

x_7 - Regulatory Quality index (RQ);

x_8 - Political Stability and Absence of Violence/Terrorism index (PS);

x_9 – Voice and Accountability index (VA);

x_{10} - Rule of Law index (RL).

The information processing with the help of EViews program enabled the following equation of regression:

(Source: elaborated in EViews program)
Figure 1. Equation of regression generated in EViews

3. RESULTS OF THE HYPOTHESIZED ASSUMPTIONS

According to the obtained in Eviews regression equation it is noted that the indicators that have an influence (Prob. <5%) on corporate insolvencies are ***Control of Corruption index (CC), Corruption Perceptions index (CPI), GDP (current US$), GDP per capita (current US$) and Voice and Accountability index (VA)***.

From the economic point of view only two of the above mentioned indicators that influence corporate insolvencies are correct, namely:

- ***Control of Corruption index***
- ***Voice and Accountability index.***

Thus, the regression coefficients in the obtained equation show a decrease of the corporate insolvencies:

- with -41674,76, when control of corruption index increase with 1 point;
- with 45339,07, when Voice and Accountability index increase with 1 point.

The solving algorithm involves the determination of the multiple correlation coefficient (R), the determinant D and other statistical characteristics (Figure 2).

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EViews - [Equation: UNTITLED   Workfile: DATE FALIMENT 2013-2017 (1)::Untitled\]
File   Edit   Object   View   Proc   Quick   Options   Window   Help
View  Proc  Object    Print  Name  Freeze    Estimate  Forecast  Stats  Resids
```

Dependent Variable: CORPORATE_INSOLVENCIES
Method: Panel Least Squares
Date: 02/15/19   Time: 19:39
Sample: 2013 2017
Periods included: 5
Cross-sections included: 15
Total panel (unbalanced) observations: 71

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-108450.3	47595.13	-2.278602	0.0263
BUSINESS_FREEDOM	-47.36542	237.0258	-0.199832	0.8423
CONTROL_OF_CORRUPTION	-41674.76	18323.10	-2.274438	0.0265
CORRUPTION_PERCEPTIONS	2238.716	945.7929	2.367025	0.0212
GDP	187.4565	67.56853	2.774316	0.0074
GDP_PER_CAPITA	2.649645	1.115388	2.375537	0.0207
GOVERNMENT_EFFECTIVENESS	-7704.856	8765.711	-0.878977	0.3829
POLITICAL_STABILITY	-5465.009	3966.674	-1.377731	0.1734
REGULATORY_QUALITY	5952.651	9206.654	0.646560	0.5204
RULE_OF_LAW	4857.950	12333.82	0.393872	0.6951
VOICE_AND_ACCOUNTABILITY	-45339.07	13517.29	-3.354154	0.0014

R-squared	0.297370	Mean dependent var		7366.465
Adjusted R-squared	0.180265	S.D. dependent var		12549.54
S.E. of regression	11362.26	Akaike info criterion		21.65551
Sum squared resid	7.75E+09	Schwarz criterion		22.00606
Log likelihood	-757.7704	Hannan-Quinn criter.		21.79491
F-statistic	2.539342	Durbin-Watson stat		0.309022
Prob(F-statistic)	0.012648			

(Source: elaborated in EViews program)

Figure 2.: Result of regression generated in EViews

According to the obtained results, we can see that R is 0.297370, which confirms a moderate relation between the corporate insolvencies and the factors included in the mathematical model. The value of the determination coefficient (D = R2) is 0,18, which means that the variation in the number of corporate insolvencies is determined, in a percentage of 18%, by the change in all the specified variables. This result fully conforms to the hypothesis H1 and H3.

The impact of GPD per capita on corporate insolvencies is rather unclear. Even though the coefficients are insignificant, the regression equation supports a significant positive relationship between GDP per capita and the corporate insolvencies. However, it is hard to define from these findings whether low GDP per capita influence on corporate insolvencies or otherwise. Thus, the hypothesis 2 and 4 should be declined.

Table 3. Summary of the findings

Hypotheses	Is the expectation met?	Findings
H1	Yes; highly significant relationship	Increasing level of corruption is associated with a greater number of corporate insolvencies. It is important to summarize that the dissimilarity in the outcome of two indicators that measures corruption could be explained due to the differences in the methodologies them. CPI measures corruption perceptions only in public sector – among public officials and politicians, whereas CC analyzes broader data sources in both public and private sectors.
H2	Unclear; rather insignificant relationship	From the economic point of view, the influence of this indicator on corporate insolvencies is incorrect.
H3	Yes; highly significant relationship	Negative significant correlation between voice and accountability and corporate insolvencies.
H4	Yes; highly significant relationship, but not for the all indicators.	The relationship becomes unclear from the economic point of view with GDP.

(Source: elaborated by authors).

CONCLUSION

The aim of this article is to observe the impact of corruption on corporate insolvencies in the Central and Eastern European countries. To achieve the goal we first defined what corruption is and how it affects corporate insolvencies. Secondly, we observed the features of corporate insolvencies in the Central and Eastern European countries according to the findings in the economic literature. At this point four hypotheses were set and based on them we create a model combining the influence of relevant corruption (economic, political and social factors, the behaviour of the government) indicators on corporate insolvencies. Some control variables, such as richness and institutional quality were also used. A correlation-regression analysis on a large sample of 15 countries over the period 2013-2017 was used.

Based on the cross-country findings of this paper a lesson for the Central and Eastern European countries can be crucial. It has been identified that the most significant drivers of corporate insolvencies among all the countries in the data set are corruption and lack of freedom of expression, freedom of association, and a free media. These two factors have to be taken into consideration by EU that is actively trying to develop the European framework for restructuring and bankruptcy management.

Another important lesson EU must consider is that it cannot perform better without improving conditions for private sector development. Based on the analysis of 15 countries the decrease of corporate insolvencies depends on several factors. One of them is corruption and it is found that corruption causes negative impact on corporate insolvencies. It is necessary to point out that countries with lower corruption level on average have less corporate insolvencies.

As a result, there are many problems for the governments of Central and Eastern European countries to work on and the findings made in this paper are only a small part of them. To eliminate corruption in Central and Eastern European countries, especially in developing countries (Ukraine, Republic of Moldova, Macedonia, Serbia, Hungary, Romania and Bulgaria) in a short run is close to impossible. The conditions for corporate insolvencies decreasing also need time for improving. This article does not give any instructions on those issues. However, based on the cross-country analysis we conclude that concentrating at least on these findings may somehow improve the prosperity of Central and Eastern European countries.

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