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An Assessment of Institutional Improvements in Romania and Bulgaria Following EU Accession

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Abstract

The purpose of this paper is to analyse to what extent accession to the European Union affected the quality of institutions in Romania and Bulgaria. In order to measure these effects, indicators of perceived corruption have been built based on data from the Life in Transition surveys I, II, III, conducted by the European Bank of Reconstruction and Development. Under the specifications of a difference-in-differences methodology, evidence of a reduction in small acts of corruption has been discovered for both countries, with larger effects in Bulgaria. In regards to high level corruption, Romania proved to be successful in tackling this dimension nine years after the accession, while for Bulgaria the evidence suggests an unfavourable deterioration over time.

Keywords: transitional economies; European Union; institutional performance; corruption; difference-in-differences.

JEL classification: D73; P37.

1. INTRODUCTION

Even from its beginnings, the European Union aimed at building a cohesive and powerful continent. Integrating new member states is a continuous objective that implies collective efforts for all parties involved. Throughout the last decades, there have been several enlargements. From six founding members in 1957 (The Netherlands, Belgium, France, Luxembourg, Germany and Italy) the European Union reached a total of 25 member states by the time of the fifth enlargement. This fifth enlargement included Romania and Bulgaria, 17 years after communism had collapsed in the two countries.

Accession to the European Union is an important step for any Central and Eastern European country, especially when considering their recent communist history, a time that dissociated them from the West on a political, economic and administrative level. Therefore, the accession could be considered as one of the most important political objectives set in countries such as Bulgaria and Romania. Consequently, this implied embracing European

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values, norms and admission requirements. One can consider that such an elaborate political process triggers a plethora of changes for any newcomer.

The EU enlargement procedure is a complex process that started in 1995 for Romania and Bulgaria and finished only in 2007. A key step in the process is the compliance with the "Copenhagen criteria". This treaty, signed in 1993, addresses three principles according to the European Commission guidelines. First, national economies need to promote efficient markets and need to be able to confront competition arising from member states. Second, the up-and-coming nations need to have the capacity to reach the goals imposed by the Union with regards to political and monetary matters. Thirdly, national institutions must be promoters and guarantors of the rule of law, human rights and democracy. We will focus more on the third aspect due to its relevance towards the research question. The membership criteria on the role of institutions has a separate chapter in the acquis, namely "Chapter 23: Judiciary and fundamental rights" (European Commission, 2022). In this chapter it is mentioned that policies should aim at eliminating and preventing corruption. This phenomenon is considered to be a liability to the well-functioning of institutions, hence, to the enforcement of EU values, the rule of law and democracy.

On a broader perspective, the accession required Romania and Bulgaria to implement new legislation under the supervision of the EU such that the admission conditions will be fulfilled. This process, as stated by the Commission of the European Communities (2006), can be seen by countries at an early accession stage as a success, an indicator that joining the Union is not impossible. The aforementioned report also highlights one important lesson to be envisaged by the Union and its future candidates. The main challenge which was highly emphasized by the European Commission was the fight against corruption which continuously slowed down the performance of institutions in the accession procedure for Romania and Bulgaria. This challenge remained under strict supervision even after 2007 through the Cooperation and Verification Mechanism (CVM). For Romania, the CVM was intended to last only for a period of 10 years, but a report of the (European Commission, 2018) underlines the necessity to extend this mechanism until further notice due to weak judicial performances at a national level. Similar misconducts and reasons for concern also appear in the case of Bulgaria. Nevertheless, these results are not surprising considering that the two countries have always ranked well above the world and European averages in terms of perceived corruption, as noticed by Transparency International or the World Bank (see Appendix B).

Mauro (2004) argues that there is little understanding of why and how the corruption phenomenon develops. Knowing that the costs of corruption are rather large and obstruct economic growth, then potential causes and consequences remain only attributable to a vicious political circle which opposes change. The author suggests that with regards to policy suggestions, corruption cannot be tackled through long term strategies, but rather through ambitious and comprehensive reforms with a continuous outside intervention, from institutions such as the European Commission. This intervention is also discussed by Auriol, Estache, and Wren-Lewis (2018) which suggest that supranational interventions might lead to diverging results in the improvement of institutions over time.

Taking the previous arguments into consideration, corruption persistence leads to the following discussion. How many years are needed to pass in order to assess a clear evaluation of the success of national and EU policy implementations? If we would discuss the solution proposed by Mauro (2004), then a short post-accession time period would exhibit the best results. Contrarily, if one would consider the decision of the Commission to extend the

duration of the Cooperation and Verification Mechanism, then the analysis of the corruption phenomenon would imply that cultural and institutional inertia need a longer time in order to yield clear results. The following paper attempts to provide an answer to the following questions: Having as post treatment years 2010 and 2016, to what extent institutional quality actually improved for Romania and Bulgaria after the EU accession? Is corruption still a setback in the betterment of the society in these two new member states?

This paper is structured in four main chapters. First, the literature review contains information on the latest theoretical concepts and empirical evidence available on the topic of European Union enlargement procedure and the linkage between corruption and institutional performances. Second, the methodology section presents the data used in the analysis alongside the specifications of a difference-in-differences model. Third, the results section includes all the estimates given by the initial regressions and by a series of robustness checks. The fourth and final section is represented by a socio-economical discussion having as starting point the evidence provided in the results section.

2. LITERATURE REVIEW

In order to develop a wider understanding of the linkage between institutional performance, corruption and EU enlargement procedure and its political implications this paper proceeds by analysing the existing literature on these intercorrelated subjects.

The concept of *institutions* can be considered to be differently defined by different members of society according to their individual perceptions and expectations. The same applies for the scientific community which only recently acknowledged the necessity for a common understanding of the concept. According to North (1990) institutions have the role of imposing and dictating rules in social interactions between citizens, firms and governments. Ménard and Shirley (2005) add to the definition of institutions their role towards reducing uncertainty and facilitating successful interactions in a society. Recent studies of New Institutional Economics have agreed upon several defining elements in addressing the concept so that a common path is paved for scientific progress. Grabner and Ghorbani (2019) observed that most researchers agree upon the "human-made" character of institutions, their structural position in society, and their role in influencing behaviours.

Once the definition of institutions has been widely recognized, their impact and influence in modern societies have been considered a cornerstone towards economic growth and development (Acemoglu & Robinson, 2008; Chang & Evan, 2005; North, 2003). Therefore, understanding what institutions are and how relevant they are in economies should only leave us to question how can institutional quality and performance be measured and improved over time.

The scientific community did not yet reach a consensus for one "silver bullet" statistical measure for institutional performance (Samadi & Alipourian, 2021). Nevertheless, in the European Union a common denominator has been constructed in order to measure institutional quality. According to Annoni and Charron (2019), such a statistical indicator can be found in the European Quality of Government Index, which has been published in 2010, 2013 and 2017. At an international level, Alexiou, Vogiazas, and Solovev (2020) take advantage of the Worldwide Governance Indicators in order to discover a positive relationship between institutions and economic developments. Using the same Worldwide Governance Indicators, Schönfelder and Wagner (2018) show that accession to the European Union has significantly increased institutional development for all member states.

In an attempt to further understand benefits and costs attributed to corruption, one can relate to a paper of Gould and Amaro-Reyes (1983), according to which there are two perspectives which should be taken into consideration for measuring corruption. As the authors present in a study conducted for the World Bank, corruption can induce both benefits and costs to the society. They believe that at a political level, through means of corruption, minorities and opposing parties gain access to what is otherwise not in their reach. In addition, corruption can aid political processes which usually take too long to materialize and which are entangled by the parties in power. At the same time, with respect to costs, corruption may lead to disruptive behaviours at an interregional level creating conflicts among its citizens whilst also weakening the lawfulness of institutions and their capability to function towards the interest of the taxpayers. Corruption is considered to have strong links to bureaucracy, not only easing the flow of its mechanisms but also diminishing public trust on all institutional grounds. Gould and Amaro-Reyes (1983) refer to corruption as a "lubricant" for rigorous and time inefficient bureaucratical procedures which at the same time lowers institutional productivity and bolsters an immoral usage of resources creating considerable economic costs.

Whilst Eastern Europe has suffered greatly from the costs assimilated to corruption, it is no longer considered to be a social norm, nor a common practice (Amini & Douarin, 2020). Nevertheless, it is considered that moral disengagement mechanisms are still persistent throughout certain social categories, thus normalizing corruption to a certain extent (Takacs Haynes & Rašković, 2021). The latter reluctance appears to be valid even in the legislative proposals aimed at tackling corruption (Batory, 2012). Moreover, a thorough investigation at an empirical level, can be observed throughout a meta-analysis of Judge, McNatt, and Xu (2011). Most of the existing studies included in the meta-analysis rely on three main indicators as dependent variables for measuring corruption but without presenting any direct evidence for Romania and Bulgaria. Firstly, there is the corruption perception index (CPI) provided by Transparency International, one which this paper uses for testing the parallel trend assumption of the difference-in-differences methodology. Secondly, the World Bank provides a Control of Corruption Index (CCI) as an alternative measure. Thirdly, the Political Risk Services has employed its own measure, Corruption Index (CI). All these indicators have proven to be highly reliable in all of the empirical research of corruption conducted after 2000, but mostly in articles which mainly aimed at discovering and understanding the causes and consequences of corruption. Judge et al. (2011) suggest that there is a high correlation between corruption and institutional performances, either with weak institutions which foster the spread of corruption or with strong ones which gradually eliminate corruption.

In a recent study of Tóth and Hajdu (2021) corruption is used a proxy for measuring institutional quality in new Southern European member states. Their results show that improvements have been made in all new EU members but that the accession itself has been proved to be insufficient for a complete institutional convergence.

Using public procurement data and control of corruption scores, Fazekas (2017) finds that many Central and Eastern European regions had witnessed substantial increases in institutional quality in the previous decade, whereas Mediterranean Europe diverged considerably.

As the focus point of this analysis consists of institutional developments in Romania and Bulgaria following the EU accession, one must understand how membership alone generates political and socio-economical changes in the respective countries.

From a political perspective, Gugiu (2012) argues that Romania and Bulgaria only reacted to the fear of sanctions as opposed to different incentives offered by the European

Commission in the fight against corruption. In the light of the author's findings, a lot of pressure had to be exercised from the European Institutions, the "stick" method, in order to motivate the national authorities to actually implement new legislation. Spendzharova and Vachudova (2012) have reached similar conclusions to those of Gugiu, arguing that the European Commission has had a positive influence over governments and institutions through an intense monitoring system implemented by the Commission, "Cooperation and Verification Mechanism". Their data proved that Romania and Bulgaria had benefited from the accession procedures but only when EU regulations worked together with the domestic incentives, such as the political agenda of governing parties. Kartal (2014) and Levitz and Pop-Eleches (2010) confirm the key role that the central EU institutions have towards reforming through political mechanisms new member states' institutions. Furthermore, the political leverage of the European Union's institutions has been proven to be successful in both diminishing the pre-accession levels of corruption and in finally facilitating the accession procedure (Noutcheva & Bechev, 2008).

In order to understand to what extent Romania and Bulgaria might have reacted different to the EU accession we refer to a study of Nenovsky, Tochkov, and Turcu (2013). The authors follow a qualitative approach, focusing on understanding the differences and similarities between Romania and Bulgaria. According to them, the two countries had a lot of shared history in between and shaped a certain "rivalry" which is valid even today in economic terms. Both had corrupted communist parties governing their respective countries up to 1989 but afterwards followed different paths towards reaching the same objective, the EU accession. The authors highlight an important difference for understanding the decision-making processes in Romania and Bulgaria. Whilst Romania had decided to rely on government, public finances and public institutions to manage economic shocks, Bulgaria relied on the private sector to handle such imbalances.

Apart from political consequences of joining the European Union, the two countries had been witnesses of economic improvements. To solidify this statement, a short report written by Khakhar and Abushal (2007) summarizes a list of benefit of Eu accession. The authors observe that even before joining, Bulgaria's gross domestic product per capita had doubled over a period of four years, whereas Romania managed to attract multiple big corporations which led to a high inward investment. The European exposure received by both countries in the pre-accession years, also promoted a continuous economic development after 2007 due to increased levels of trust offered to foreign investors by increased regulation.

In terms of empirical evidence, the observed literature for institutional performance and EU membership is to a certain extent limited for Romania and Bulgaria alone. Nevertheless, the two countries of interest are included in multiple articles which address the Eastern Europe as a whole.

Using a dynamic panel econometric analysis, Balcerzak and Pietrzak (2016) highlight a multitude of benefits for newly integrated member states. Institutional improvements for Romania are considered an indirect result of their efforts towards implementing reforms. Moreover, the EU's Cooperation and Verification Mechanism, has been empirically tested by Lacatus and Sedelmeier (2020) and found to foster the creation of strong anti-corruption institutions in Romania and Bulgaria.

While the effects of joining the European Union are generally found to yield positive results in terms of corruption and institutional developments, parts of the scientific community argue for caution. Accession to EU funds has been proven to considerably increase corruption

risks in Central and Eastern Europe instead of promoting integrity and fostering institutional development (Fazekas, 2017). Moreover, Dimitrova (2020) argues that Bulgaria, as well as Romania, are not yet full "European Member States" due to their inability to embrace all trends and values that the Union puts forward.

With respect to previous studies on corruption in Romania, we have discovered that the existing papers were mainly of a qualitative nature. Letia (2014) discusses legal implications and possible sanctions which could act as a deterrent for corruption, noticing that the Romanian legislation has a lot of room for improvement when compared to Western, more developed countries. Yet again, Stancu (2013) presents only a historical analysis on when corruption appeared in state laws, and how it changed definitions along centuries. Another analysis on corruption in Romania (Dutulescu & Nisulescu-Ashrafzadeh, 2016) describes only a static image of this phenomenon as it spreads through the 42 counties. In this paper the authors have constructed three indicators in order to cartograph corruption using levels of income, educational attainments and an average imprisonment period related to corruption. The same approach is used by Zaman and Ionescu (2014) who construct a composite index of corruption based on direct and indirect influences and rank Romania and Bulgaria on the bottom of the list of European countries for year 2012.

With regards to existing corruption-related literature for Bulgaria one could notice a paper of Emerson (2006). The author highlights that starting with early 2000's significant improvements had been made by European Institutions and entities of the United States in order to tackle corruption in Bulgaria. There seems to be a divergent opinion between scholars and the general consensus of citizens. On the one hand, experts involved in analysing corruption through acts of governmental institutions and their mechanisms support the idea that there is a positive trend in regards to the implementation of policies which seemingly aim at increasing transparency and accountability. On the other hand, the public opinion opposes this belief, showing diminishing levels of trust in democracy, integrity and purpose of their government. The evidence provided by this article can be considered as a starting point, the analysis being conducted up to 2006, for assessing if institutional improvements followed the same trend after EU accession.

Having observed existing literature on this field, there seems to be a gap in the research for EU accession effects in Romania and Bulgaria. It is found that studies of an empirical nature have been conducted primarily with a focus on the Central and Eastern European member states. The discovered results are in line with the expected results for the current paper. More precisely, it seems that membership in the EU has determined lower levels of corruption and an overall improved institutional quality.

3. DATA AND METHODOLOGY

The data used in this paper originates from Life in Transition surveys I, II and III. These surveys were conducted by the European Bank of Reconstruction and Development in a partnership with the World Bank in order to measure attitudes and beliefs of citizens belonging mainly from developing countries.

The above-mentioned surveys are the most recent source of data available for the construction of the variables included in the analysis. The surveys successfully include data for one point in time before the EU accession, respectively 2006 as well as two points in time after the accession, respectively 2010 and 2016. This implies that the chosen methodology benefits of sufficient and relevant observations so that the analysis is expected to yield reliable

results. The limitation of the available data is that it only allows for an assessment of the trends until 2016. Nevertheless, the ten-year period is considered satisfactory for measuring the change in institutional performances.

3.1 Data description

Life in Transition surveys offer a variety of questions divided in multiple sections depending on the type of information they provide. The one which contains the most valuable information for the present analysis is available in the "Attitudes and Values" section.

With regards to data management, a first necessary step was to append the three databases, for the surveys of 2006, 2010 and 2016, into a single data file. In a preliminary step, these were combined irrespective of any particularities, keeping all of the original variables and labels as they were initially coded. Therefore, the database contained at that point a total of 119072 observations and 2942 variables. In order to conduct this research with the aforementioned surveys, it was required to keep only the questions which were common among the individual data files, otherwise the statistical software could not provide reliable estimates having considerable amounts of missing values. In addition, the collected variables were coded such that they now use the same storage type, namely type double and were renamed in a structured and clear way such that the append function could properly be enabled.

3.1.1 Dependent Variables

The first dependent variable is based on one question that asks the respondents which factors are the most important for achieving success in their respective country at the time when the survey was conducted. This measure of corruption will be referred to as *FactorsToSuccess* in the following sections (see Figure no. 1).

Q.3.06	In your opinion, which of the factors in this list is the most important to succeed in life in this country now?
Q.3.07	And before 1989, which of the factors in this list was the most important to succeed in life in this country?

- **INTERVIEWER: SHOW CARD 12–ONE ANSWER ONLY FOR Q3.06 AND FOR Q.3.07**

	Q3.06 Now	**Q3.07** Before 1989
	744-745	**746-747**
Effort and hard work	01	01
Intelligence and skills	02	02
Political connections	03	03
Criminal/corrupt ties	04	04
Other (specify)……	05	05

Source: Retrieved from The European Bank for Reconstruction and Development (2006)

Figure no. 1 – Origins for *FactorsToSuccess*

The variable we constructed has the value 1 if the responses were "political connections" or "criminal/corrupt ties" and 0 for all of the other remaining choices, namely "effort and hard work" and "intelligence and skills''. This is considered to be a strong indicator of perceived corruption due to the fact that it captures a detrimental ideology according to which success is not dependent only on one's aptitudes and skills, but on third parties that can act as facilitators on institutional matters. In regards to this newly created variable, we observe a significant

number of respondents for which the most important factor for success in life has corrupt implications. According to Figure no. 2, all central and eastern European countries rank high above western European member countries. The selection of countries was made such that the analysis entails the two countries of interest, Romania and Bulgaria, future candidates for EU accession (Turkey, Armenia, Albania) and older members (France, Germany and Sweden).

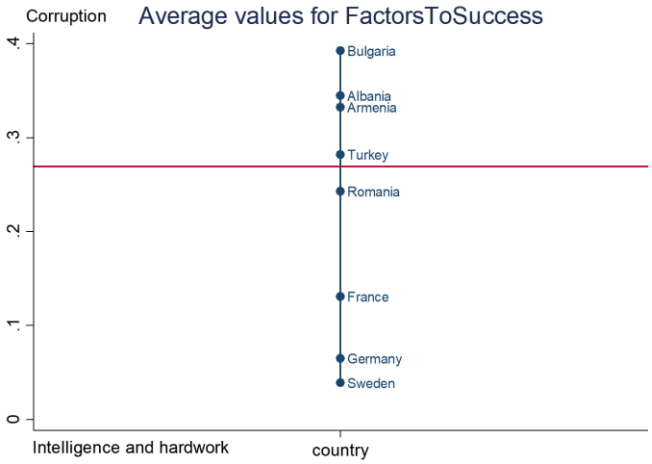

Figure no. 2 – Levels of corruption between countries measured through *FactorsToSuccess*

The survey data also presents an alternative measure for corruption, namely a question that measures how often people consider unofficial payments or gifts to be necessary.

Q. 3.13	In your opinion, how often is it necessary for people like you to have to make unofficial payments/gifts in these situations?

- **INTERVIEWER: SHOW CARD 18**
- **Q.3.13 – Rate all situations**
- **Q3.13 scale: Never=1, Seldom=2, Sometimes=3, Usually=4, Always=5**

	Q3.13				
	Never	Seldom	Sometimes	Usually	Always
Interact with the road police	1	2	3	4	5
Request official documents (e.g. passport, visa; birth or marriage certificate, land register, etc…) from authorities	1	2	3	4	5
Interact with the police on matters other than traffic and other than requesting documents	1	2	3	4	5
Go to courts for a civil matter?	1	2	3	4	5
Receive medical treatment in the public health system	1	2	3	4	5
Receive public education (university, college, vocation	1	2	3	4	5
Request unemployment benefits?	1	2	3	4	5
Request other social security benefits	1	2	3	4	5

Source: Retrieved from The European Bank for Reconstruction and Development (2006)

Figure no. 3 – Origins for *FrequencyOfBribesAVG*

As it can be observed in Figure no. 3, the number of situations where an answer was required is quite large, about eight different circumstances being presented in each of the three surveys. In order to identify if all of these questions measured the same conceptual dimension, a factor analysis has been conducted (see Appendix A1 and Appendix A2 for results). The factor analysis suggests clearly the existence of only one factor, with an Eigenvalue well above one and a cumulative percentage of 68.02%. In addition, all factor loadings have a positive sign, meaning that a higher Factor Score translates in higher levels of perceived corruption. This result was also backed by a reliability analysis with a value of 94.06% for the Cronbach Alpha, considerably higher than a threshold of 80% commonly used in the scientific research community. Therefore, this led to the construction of the second measure for our outcome of interest, *FrequencyOfBribesAVG*. This variable was coded as the average response to the scenarios under Figure no. 3, with values ranging from 1 to 5, one being "never" and five being "always". By doing so we can capture in one variable how often people perceive bribes as being necessary in almost all of their interactions with public institutions. The advantage of this variable compared to *FactorsToSuccess* is that it captures more information so it allows for some preliminary descriptive statistics.

Comparing Figure no. 2 with Figure no. 4, we observe that there is a slight shift in the ranking of countries. Bulgaria is no longer on top of the corruption list, being slightly situated under the average of the sample. Nevertheless, the same discrepancy remains between Eastern and Western countries, in which the European Union's values and mechanisms have successfully flourished in countervailing corruption.

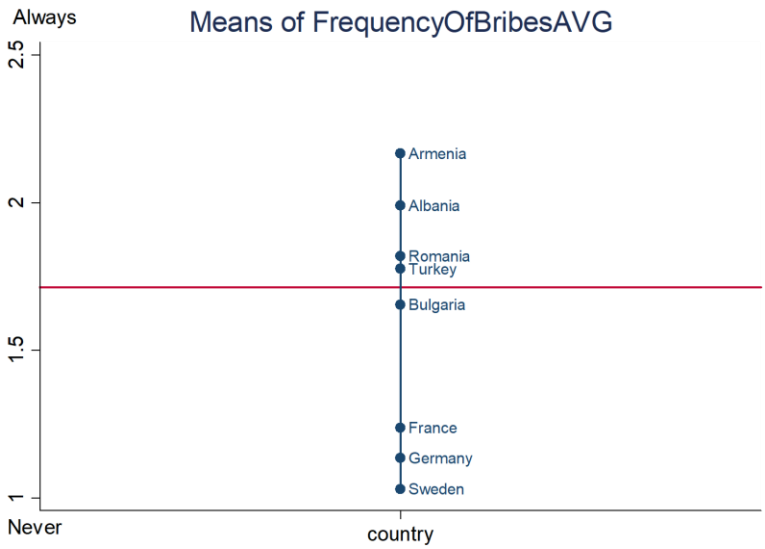

Figure 4. Levels of corruption measured through FrequencyOfBribesAVG

In Table no. 1, the two dependent variables are presented with a set of descriptive statistics, based on data from all three surveys. Either by analysing *FrequencyOfBribesAVG* or *FactorsToSuccess*, the same information as in Figure no. 2 or Figure no. 4 appears. Albania, Armenia, Bulgaria, Turkey and Romania have very similar means for our dependent variables, whereas France, Germany and Sweden present lower levels of perceived corruption.

Table no. 1 – Descriptive statistics for the two employed dependent variables

	N	Mean	Standard deviation
Albania			
FrequencyOfBribesAVG	3143	1.99	1.019
FactorsToSucces	3555	.345	.475
Armenia			
FrequencyOfBribesAVG	2736	2.166	1.066
FactorsToSuccess	3527	.332	.471
Bulgaria			
FrequencyOfBribesAVG	2783	1.654	.876
FactorsToSuccess	3514	.393	.488
France			
FrequencyOfBribesAVG	965	1.237	.446
FactorsToSuccess	1009	.131	.337
Germany			
FrequencyOfBribesAVG	2440	1.135	.358
FactorsToSuccess	2542	.065	.246
Romania			
FrequencyOfBribesAVG	3072	1.818	.911
FactorsToSuccess	3590	.243	.429
Sweden			
FrequencyOfBribesAVG	875	1.029	.167
FactorsToSuccess	900	.039	.193
Turkey			
FrequencyOfBribesAVG	3075	1.775	1.02
FactorsToSuccess	3504	.282	.45

By analysing the histograms for Romania in Figure no. 5, we observe that the highest percentage of respondents considers that one is never required to use bribe as a tool for achieving their interests in state related issues.

Nevertheless, the necessity for bribes persists in some of the respondents' perception even closely after the EU accession in 2010, as well as in 2016. In 2010, with the majority of answers being either seldom, or sometimes, there are almost no respondents who consider bribes always necessary in their interaction with public institutions. Significant changes can be observed in 2016, where the majority of answers shift towards never and seldom. A possible reason for concern can be found in the percentage increase for the respondents who find bribes always necessary in their interactions with public institutions, in 2016.

In comparison, in the case of Bulgaria, there seems to be a constant decrease in peoples believes towards the necessity of bribes. The majority of respondents answered "never" in 2010 and 2016 with the rest of the answers being very close in average to "never". If we would draw a conclusion only based on the three histograms, we could assume that the perceived corruption decreased after adhering to the European Union, consequently the quality of institutions might have improved. The same rationale is valid if we analyse the rest of the available answers. The only outliers can be found in 2016 compared to 2010 for the small group of respondents who consider bribes usually necessary (see Figure no. 6).

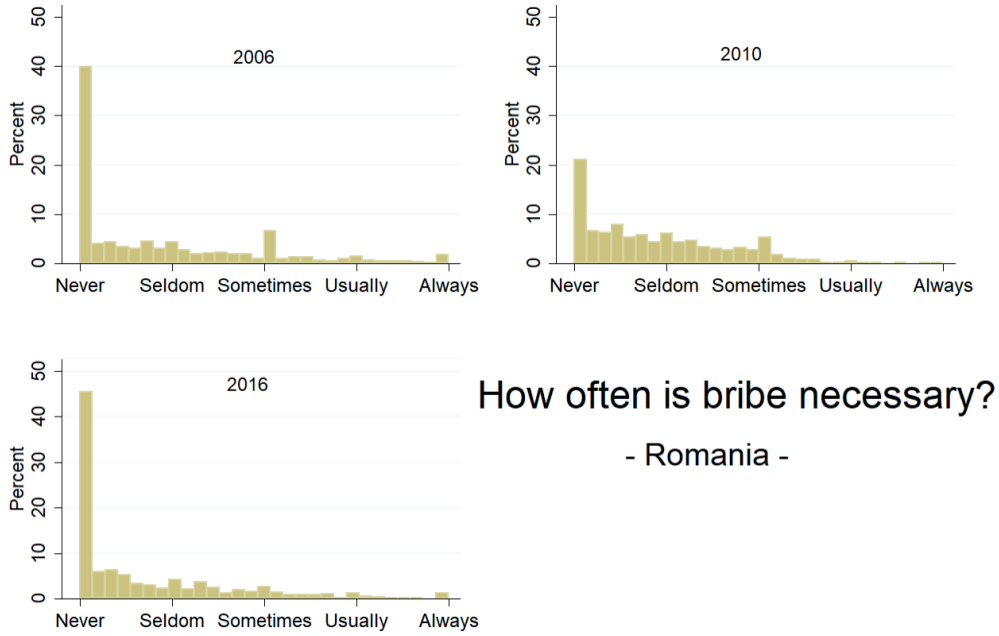

Figure no. 5 – Histograms representing the distribution of answers based on *FrequencyOfBribesAVG* for Romania

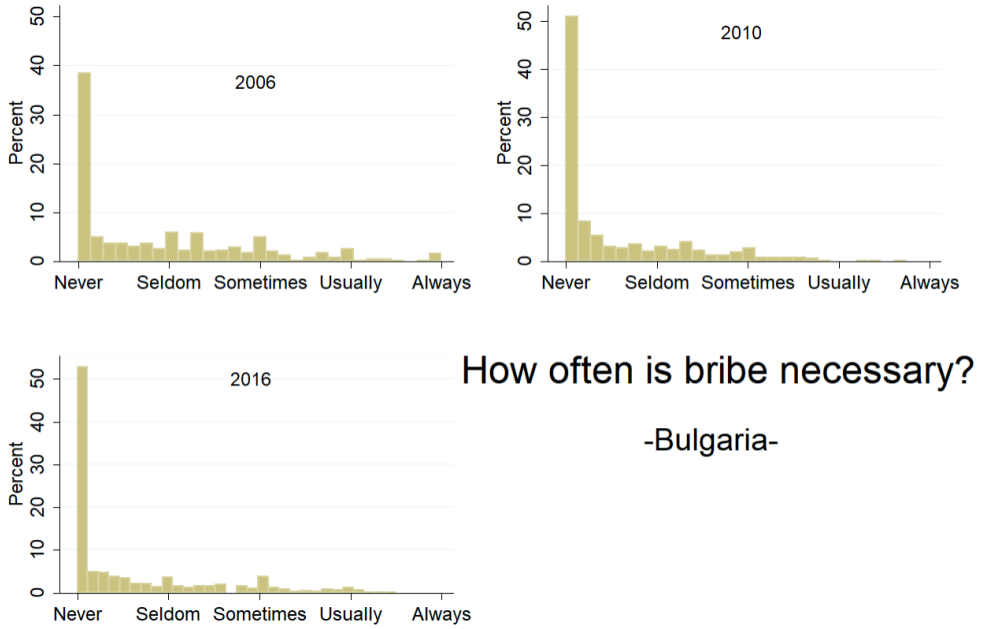

Figure no. 6 – Histograms representing the distribution of answers based on *FrequencyOfBribesAVG* for Bulgaria

Furthermore, we have tested through ANOVA tables if there are significant differences in the average perceived corruption between the treatment countries and other viable candidates for control countries. Starting with a sample size of 19089, an average of about 3000 observations per country, and a F value of 424.31 we obtain a Prob > F of 0.000 determined by the one-way ANOVA, meaning that there is a statistically significant difference between the analysed countries (Romania, Bulgaria, Turkey, Albania, Armenia, France, Germany and Sweden). These results can be observed in detail in Table no. 2 below.

Table no. 2 – Analysis of Variance between countries

Summary of ANOVA

	Sum of Squares	df	Mean Square	F	Prob > F
Between Groups	2300.08	7	328.58	424.31	0.0000
Within Groups	14776.07	19081	.8908		
Total	17076.15	19088	.8946		

Similarly, in table 3 statistically significant differences can be observed between the pre and post treatment years.

Table no. 3 – Analysis of Variance between pre and post treatment dates

Summary of ANOVA

	Sum of Squares	df	Mean Square	F	Prob > F
Between Groups	74.25	2	37.12	41.68	0.0000
Within Groups	17001.90	19086	.8908		
Total	17076.15	19088	.8946		

3.1.2 Explanatory variables

In addition to the existing variables, a series of dummy variables had to be created such that they would serve the specifications of the difference-in-differences model.

For time, two dummies were created due to the availability of two post accession sets of data such that the first dummy takes the value 0 for the year 2006, 1 for the year 2010; whereas the second dummy takes the value 0 for the year 2006 and 1 for the year 2016. By doing so, the current analysis is able to present short-term effects, three years after treatment and long-term effects, nine years after the EU accession.

A secondary set of dummy variables had to be generated in order to differentiate between the countries which received the treatment taking the value 1, that being the case of Romania or Bulgaria, and the value 0 for the different countries selected as control countries; all of the other observations in the dataset were registered as missing values such that they would not be used for any regression if not necessary.

One final set of dummies was created such that it represents the interaction between time and treatment. In all future regressions, the effects of the treatment (EU accession) are captured by the coefficients of the difference-in-differences interaction terms.

A highly relevant aspect of the Life in Transition surveys is the very strict sampling procedure developed by the researchers, namely primary sampling unit, which provides unbiased data, eliminating any doubt with regards to the quality of the database. The respondents were randomly chosen from multiple sampling units constructed through data

available at electoral registers or national institutes of statistics such that they form a very diversified and complex representation of the entire population, eliminating as much as possible any individual sources of bias. Although the sampling process accounted for many of these sources, the researchers behind "Life In Transition" surveys observed that predominantly women, retirees and low educated people were available to partake in the survey when their respective households were contacted. This was a sufficient indicator that the regressions needed to control for gender, age and education levels, such that the estimates accuracy would furthermore be improved.

3.2 Methodology

In order to estimate the causal effects of EU accession, a difference-in-differences methodology will be used. If only a before and after comparison on the perceived corruption of individuals would have been applied, it would have been impossible to strike out all the other factors of influence which could have affected those perceptions in the analysed time period. Our methodology compares the changes in perceived corruption before and after 2007 for a treatment country with the changes in a control country, allowing us to differentiate the trends of corruption as they develop over time. Moreover, through this methodology one is able to control for both observed time-invariant characteristics and unobserved time-invariant characteristics.

Apart from the equal or parallel trends assumption, we consider that there was no other event which could have significantly influenced people believes upon corruption at an institutional and political level in both treatment and control countries. This could be considered as a strong identifying assumption, one on which the difference-in-differences approach heavily relies upon.

We continue by presenting the equation line which describes the difference-in-differences methodology. According to Albouy (2004), the equation can be written as follows:

$$Yi = \alpha + \beta Ti + \gamma ti + \delta\,(Ti * ti) + b * Age + c * EducationLevels + d * Gender + \varepsilon i,$$

where:

- α = constant term
- β = treatment group effect
- γ = time trend common to control and treatment groups
- δ = true effect of treatment
- T = treatment status (0 for control group, 1 for treated group)
- t = time period (0 before treatment, 1 after)
- b,c,d = slopes of Age, Education Levels and Gender

3.2.1 Parallel trends assumption. Decisions of control groups

For the selection of the control group, the parallel trends assumption has to be verified. This implies that the outcome of interest needs to have a similar evolution for both treatment and control countries before the treatment was applied. In order to verify this assumption, we have used data collected by Transparency International, one of the most reliable and consistent organizations in the worldwide fight against corruption. Their method of defining the

Corruption Perception Index relies on measuring perceived corruption, on a scale from 0 to 10, 0 indicating high levels of perceived corruption where 10 represents a complete lack of it.

In order to construct Figure no. 7, we have grouped countries which had similar CPI scores for year 2006 and could be considered similar in terms of other characteristics, such as gross domestic product/capita. By analysing this graph, we observe that Romania presents a parallel trend with **Turkey**, while for Bulgaria the best suggestion with respect to a control country seems to be **Armenia**.

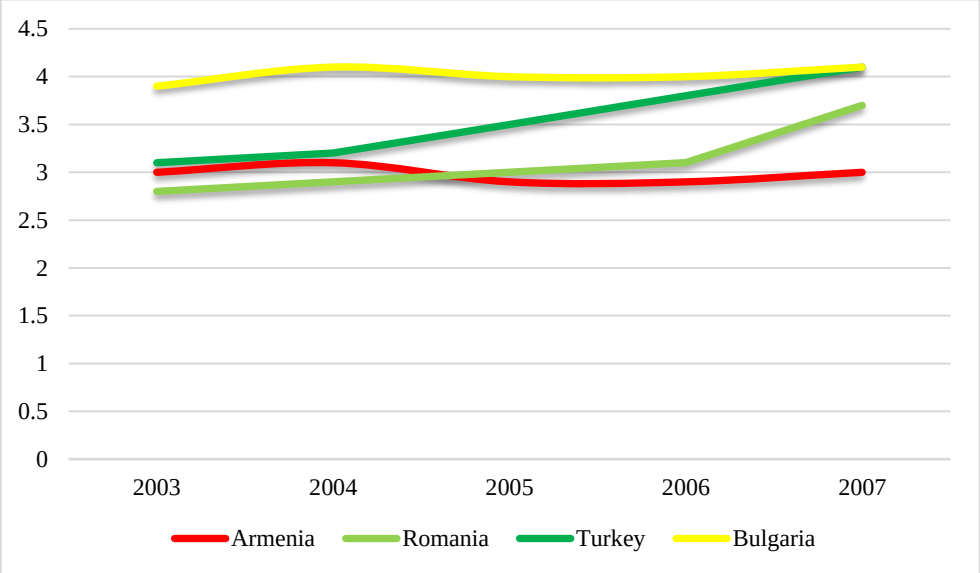

Figure no. 7 – Parallel trend assumption check using CPI index

Considering the three most popular measures of corruption observed by Judge et al. (2011), we have decided to have a secondary check for the parallel trends assumption in Appendix B, now using The World Bank Control of Corruption index. According to the conductors of this indicator, the CCI successfully combines both small and large acts of corruption.

Either by using the CPI or the CCI, for the same countries mentioned as before in Figure no. 7, we observe the same pre-treatment trends. Therefore, the decision of selecting **Turkey** as a control group for Romania and **Armenia** for Bulgaria**,** is furtherly strengthened.

4. RESULTS

After applying all the required specifications of the difference-in-differences methodology, the next part will analyse the results of the regressions. The statistical package used for obtaining the results is Stata 13. For the two employed dependent variables, *FrequencyOfBribesAVG* and *FactorsToSucces*, ordinary least squares regressions are used. Firstly, this thesis presents and discusses the estimates for Romania, then for Bulgaria, and afterwards the differences and similarities, if any, between the two countries.

4.1 Romania

This section commences by analysing the regression for Romania as being the country which received the treatment (EU accession) and Turkey the control country. The detailed results are presented in Table no. 4.

Firstly, *FrequencyOfBribesAVG* is used as the dependent variable. When doing so, the impact of the EU accession lead to a decrease of 0.29 in perceived corruption for individuals, on a scale of 1 to 5, when the post treatment period is 2010, result significant at a 1% level. The results are similar 9 years after treatment occurred, when we observe a decrease in the required frequency of corrupt acts of 0.30, also significant at the 1% level.

Secondly, when analysing the coefficients for the regression which uses *FactorsToSuccess* as a dependent variable, there is no statistically significant effect for three years after treatment. For nine years after treatment, the effect of the EU accession is consistent with the one showed by the difference-in-differences estimator for the regression of *FrequencyOfBribesAVG*, but of a lower magnitude. In this case, EU accession appears to have determined people to consider less political connections or corrupt ties as a factor for success in life.

Table no. 4 – Regression Results; Treated country Romania // Control Turkey

	(1)	(2)	(3)	(4)
	FrequencyOfBribesAVG	*FactorsToSuccess*	*FrequencyOfBribesAVG*	*FactorsToSuccess*
DiD estimator	-0.299***	0.028		
	(0.056)	(0.027)		
Education	0.056***	-0.022	0.017	0.016***
	(0.011)	(0.020)	(0.012)	(0.005)
Age	-0.003***	0.032***	-0.004***	0.000
	(0.001)	(0.005)	(0.001)	(0.000)
Gender	0.021	-0.000	0.195***	-0.029**
	(0.032)	(0.000)	(0.033)	(0.014)
DiD estimator			-0.300***	-0.167***
			(0.061)	(0.026)
_cons	1.431***	-0.008	1.420***	0.197***
	(0.068)	(0.016)	(0.075)	(0.031)
Obs.	3895	4082	4252	5012
R-squared	0.072	.z	0.055	.z
Post treatment year	2010	2010	2016	2016

Note: Standard errors are in parenthesis; *** p<0.01, ** p<0.05, * p<0.1

4.2 Bulgaria

For Bulgaria, as explained in the Methodology section, Armenia was used as a control country. Time specifications are the same as for Romania, 2006 pre-treatment and 2010 and 2016 post-treatment. In a similar manner, the evidence for the two dependent variables can be observed in Table no. 5.

Firstly, when considering *FrequencyOfBribesAVG* as the dependent variable, and the data for three years after treatment, there appears to be a decrease, on a scale of 1 to 5, of 0.87 in the frequency of interactions with public servants in which acts of corruption are required. For nine years after treatment, this effect is significantly magnified to a decrease of 1.36, significant in both time periods at the 1% level.

Secondly, for the binary measure of corruption, *FactorsToSuccess*, through the difference-in-differences estimator, it can be noticed that the accession to the European Union determined Bulgarian citizens to consider political connections or corrupt ties to be much more of a necessity for success in both post treatment dates.

Table no. 5 – Regression Results. Treated country Bulgaria // Control Armenia

	(1) *FrequencyOfBribesAVG*	(2) *FactorsToSuccess*	(3) *FrequencyOfBribesAVG*	(4) *FactorsToSuccess*
DiD estimator	-0.875***	0.120***		
	(0.062)	(0.031)		
Education	0.083***	0.016***	0.056***	0.016***
	(0.012)	(0.006)	(0.010)	(0.004)
Age	-0.003***	-0.001**	-0.004***	-0.001*
	(0.001)	(0.001)	(0.001)	(0.000)
Gender	-0.073**	-0.014	-0.010	-0.044***
	(0.032)	(0.016)	(0.031)	(0.014)
DiD estimator			-1.364***	0.228***
			(0.060)	(0.027)
_cons	1.618***	0.492***	1.722***	0.496***
	(0.081)	(0.041)	(0.072)	(0.033)
Obs.	3648	4014	3871	5027
R-squared	0.070	0.020	0.207	0.041
Post treatment year	2010	2010	2016	2016

Note: Standard errors are in parenthesis; *** p<0.01, ** p<0.05, * p<0.1

4.3 Effects of gender, age and education

Controlling for gender, as stated in the methodology section, is a necessary mean to balance the ratio of male-female respondents, which inclined more towards the latter. Tannenbaum, Greaves, and Graham (2016) that neglecting gender may lead to over or under estimations of the true effects because it impacts directly each individual thought process. The same reasoning can be applied for age and levels of education. Therefore, this section continues by observing these effects throughout all the specifications.

It appears that gender, in the case of Romania, has a strong influence only when considering 2016 as a post treatment year and *FrequencyOfBribesAVG* as a dependent variable. For Bulgaria, the regressions unfold only one significant effect at a 10% level for gender. Females as compared to males, the reference category, consider that acts of corruption are less necessary in interactions with public institutions or civil servants for year 2010.

A higher number of schooling years, meaning higher levels of education at an individual level, lead under all specifications, to an increased perception of corruption. The coefficients, ranging from 5% to 8%, are all significant at a 1% level. This effect is also very similar in the case of Romania, where estimates rely between 5% to 6%.

In the case of age, both for Romania and Bulgaria, the results show that age does not play a significant role in explaining the perceived levels of corruption.

4.4 Robustness checks

Leamer (1983) places a great emphasis on the necessity for a reassurance on the reliability of an inference design. He argues that sensitivity analysis should become vital in all researches, thus expanding the horizon for which the results hold. Otherwise, there might appear a risk that the estimates and conclusions could altogether be too fragile.

In order to test if our results hold under different assumptions, we have decided to perform robustness checks by reversing the control countries. According to Wing, Simon, and Bello-Gomez (2018), robustness checks may be performed by including an additional control group in order to test the validity of the DID research design. A similar approach is proposed by Atanasov and Black (2016) which recommend for adding as control groups states which are expected to benefit from the treatment at a future date. Therefore, we proceed to analyse differences or similarities in the size and directions of the effects when we use future candidate Armenia as a control for Romania and future candidate Turkey as a control for Bulgaria.

Table no. 6 – Robustness Results. Treated country Romania // Control country Armenia

	(1)	(2)	(3)	(4)
	FrequencyOfBribesAVG	*FactorsToSuccess*	*FrequencyOfBribesAVG*	*FactorsToSuccess*
DiD Interaction	-0.217***	0.182***		
	(0.056)	(0.029)		
Education	0.036***	0.020***	0.022**	0.026***
	(0.011)	(0.006)	(0.011)	(0.004)
Age	-0.005***	-0.001**	-0.007***	-0.001*
	(0.001)	(0.000)	(0.001)	(0.000)
Gender	-0.023	-0.004	0.075**	-0.019
	(0.030)	(0.015)	(0.032)	(0.013)
DiD interaction			-0.811***	-0.210***
			(0.062)	(0.025)
_cons	1.855***	0.471***	1.928***	0.443***
	(0.077)	(0.039)	(0.077)	(0.031)
Obs.	3960	4078	3848	5039
R-squared	0.051	0.045	0.181	0.058
Post-treatment Year	2010	2010	2016	2016

Note: Standard errors are in parenthesis; *** p<0.01, ** p<0.05, * p<0.1

Table no. 7 – Robustness Results. Treated country Bulgaria // Control country Turkey

	(1)	(3)	(4)	(6)
	FrequencyOf BribesAVG	*FactorsTo Success*	*FrequencyOf BribesAVG*	*FactorsTo Success*
DiD interaction	-0.937***	0.043		
	(0.059)	(0.029)		
Education	0.109***	0.028***	0.054***	0.007
	(0.012)	(0.006)	(0.010)	(0.005)
Age	-0.001	-0.001	-0.001	0.000
	(0.001)	(0.000)	(0.001)	(0.000)
Gender	-0.033	-0.020	0.114***	-0.057***
	(0.035)	(0.017)	(0.032)	(0.015)
DiD interaction			-0.813***	0.145***
			(0.059)	(0.028)
_cons	1.250***	0.204***	1.253***	0.249***
	(0.072)	(0.035)	(0.071)	(0.033)
Obs.	3583	4018	4275	5000
R-squared	0.088	0.043	0.060	0.024
Post treatment year	2010	2010	2016	2016

Note: Standard errors are in parenthesis; *** p<0.01, ** p<0.05, * p<0.1

In Table no. 6, the same trends can be observed in changes of perceived corruption in Romania for the indicators constructed on the basis of Question 3.13. When using *FrequencyOfBribesAVG* as the dependent variable, the effect for three years post-treatment time rests in a similar decrease, slightly smaller compared to the initial effect. Also, the validity of the initial results is confirmed for nine years post-treatment. For these robustness tests, all estimates are significant at a 1% level. Furthermore, in the case of *FactorsToSucces*, the reliability of the initial results is confirmed.

Yet again, in Table no. 7, the overall image is very similar with regards to the size of the effects that the EU accession had in Bulgaria when *FrequencyOfBribesAVG* is used as a dependent variable. For *FactorsToSucces*, the robustness tests confirm the same effects when changing the control country from Armenia to Turkey.

5. DISCUSSION

This paper presents the effects that accession to the European Union had on corruption for Romania and Bulgaria, two Eastern European countries which adhered in 2007. The current section aims at providing a clear picture based on the regression results for the two constructed measures of corruption and on the differences between short-term and long-term effects.

Taking into consideration that the situations provided in the Life in Transition surveys mainly consist of daily interactions with either police officers, doctors or civil servants, one can expect that *FrequencyOfBribesAVG* captures a small dimension of perceived corruption which is reduced only to petty and trivial acts. Nevertheless, the necessity for such acts represents a constituent of public institutions.

In the same time, the responses used to construct our second measure lead to another dimension of perceived corruption. If respondents considered the most important factors to success in life to be political connections or corrupt ties, this might determine our *FactorsToSuccess* variable to fit a much more severe and prejudicial dimension of perceived corruption. This fact offers the possibility for the current thesis to observe a much more profound perception of corruption at the level of governments, public institutions and the political sphere. According to Gament (2015) there is no "one size fits all" solution in approaching this level of corruption because it originates from a multitude of sources and it is difficult to trace and identify.

First of all, in the case of Romania, it can be observed that the membership had substantial effects in reducing the perceived necessity for bribes, gifts or unofficial payments in a plethora of interactions with the state's institutions and representatives. Furthermore, the accession shifted people's beliefs from considering corruption as a tool for success to considering own intelligence and hard work as fundamental factors. In Romania, the two dimensions of corruption, petty and severe, appeared to have decreased three years after treatment as well as nine years after the treatment. If we would to refer to the results of Levitz and Pop-Eleches (2010) we can support the idea that no backsliding appeared closely after the accession nor at a later point in time. Furthermore, Lacatus and Sedelmeier (2020) confirm that the fight against corruption was much more successful in Romania than Bulgaria due to the key role of the Cooperation and Verification Mechanism.

Secondly, in Bulgaria, the two observed dimensions of perceived corruption did not follow the same diminishing trend. On one hand, the European Union's mechanisms emerged as being much more effective in reducing the small levels of corruption, in comparison with

Romania. The effect for three years post treatment is about three times higher, whilst for nine years post treatment the impact is about four times more acute. Thus, if we would evaluate the quality of institutions based on this indicator, we could successfully assume that institutions, through the means of their low-tier representatives, might have improved. On the other hand, if we refer to *FactorsToSuccess*, the perception of individuals over high-level corruption has worsened considerably, the effect being two times higher in the long term compared to the short term.

Overall, the necessity for small gifts and petty cash payments in interactions with the low-tier public servants and state representatives appears to continuously fade away from the beliefs of Romanian and Bulgarian citizens as a consequence of the inclusion in the European Union. This result can be perceived as a positive outcome of the enforcement of European values and social norms that directly translates into better institutions.

In the same time, even after the enlargement took place, Bulgarian respondents consider that their state fails in inducing an ideology according to which success is achievable only through one's own aptitudes, intelligence and hard work and not through political connections or corrupt ties. Therefore, if we would attribute this belief over high-level corruption to the quality of institutions, we could infer that EU accession had a negative effect in Bulgaria. Nevertheless, this result must be treated with caution due to the following argument.

Considering the fact that there are no direct indicators of performance for measuring institutional improvements, then one has to rely on perceptions of individuals over corruption. When doing so, one question might rise: are those perceptions fully based on people's personal experience with institutions? The fact that access to information is increasingly easier every day makes people acknowledge the power and influence of mass media and internet in shaping ideologies in the thought process of individuals. Mutz and Young (2011) argue that citizens, with the development of internet, have at their disposal all necessary means to judge the actions of institutions and politicians, but while doing so, they might collect the information they need based on false news or extremist sources which seek only to exaggerate reality by presenting a distorted image. When thinking ahead, one must consider this a possible limitation for all similar studies based on survey data because attitudes and believes of citizens might not entirely capture the reality, with different media campaigns possibly biasing their vision.

6. CONCLUSION

The European Union can be perceived as an incubator for strengthening economies and societies of adhering countries. Membership in the EU provides many benefits such as the single market, peace and security, but also imposes several obligations. One of these requirements is achieving high standards with regards to the quality of institutions and the rule of law. This thesis aimed at assessing the impact that the European Union had on institutional performance on two of the newest member countries, Romania and Bulgaria. These countries, even though they had made a lot of progress since 1989, were still not fully in line with the standards imposed by older member states when the enlargement procedure was enacted in 2007.

This paper took advantage of the availability of data provided by the European Bank of Reconstruction and Development. The Life in Transition surveys I, II and III, were used to establish a causal interference model using a difference-in-differences approach. Furthermore,

on the basis of the Corruption Perception Index and the Control of Corruption index, Turkey was selected as a control group for Romania and Armenia as a control group for Bulgaria.

The data allowed us to differentiate between a short post treatment period of three years and a long post treatment period of nine years. For both countries, small acts of corruption appeared to decrease as a consequence of EU accession in the two post treatment dates. High-level perceived corruption also decreased for Romania nine years after joining the Union, but appears to follow an increasing trend for Bulgaria.

The results reached in this research could be considered equally insightful for Romania, Bulgaria and future EU candidates. Policy makers from the two new member states benefit now of an empirical assessment of institutional performances after joining the European Union. Through this paper, they should be able to better understand the extent of the corruption phenomenon in their respective countries, thus increase the pace to which the Cooperation and Verification Mechanism recommendations are fulfilled. Future EU candidates can benefit from this research by acknowledging the timeframe and impact the EU accession had on the quality of institutions in Romania and Bulgaria.

This thesis presents a series of possible limitations which must be considered in the case of further research. As this analysis relies on survey data, results must be treated with caution because respondents might not be willing to answer in all honesty. In the case of Armenia and Turkey effects of anticipation might bias the data, as citizens of those countries might want to provide a more desirable image of their country. For Romania and Bulgaria, the respondents could have answered the surveys with a fear of repercussions from the national authorities, thus understating the reality. Furthermore, corruption, as an impediment in institutional performances, could also be correlated to changes in wages. This economical aspect is not integrated in this thesis, but it can be assumed that an increase in real wages for public servants or higher representatives of the government might act as an incentive for them to refuse unofficial payments. Therefore, further research is a requisite such that policy makers and politicians have all necessary evidence at their disposal in order to develop sound strategies for eradicating corruption and improving the overall performance of institutions.

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APPENDIX A: FACTOR AND RELIABILITY ANALYSIS

Appendix A1

Factor analysis/correlation

- Number of observations = 103603
- Method: principal-component factors
- Retained factors = 1; Number of parameters = 8

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	5.44197	4.83601	0.6802	0.6802
Factor2	0.60596	0.13217	0.0757	0.7560
Factor3	0.47379	0.02966	0.0592	0.8152
Factor4	0.44413	0.12130	0.0555	0.8707
Factor5	0.32283	0.01412	0.0404	0.9111
Factor6	0.30872	0.04631	0.0386	0.9497
Factor7	0.26241	0.12222	0.0328	0.9825
Factor8	0.14019	.	0.0175	1.0000

LR test: independent vs. saturated: chi2(28) = 6.2e+05 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Item	Factor1	Uniqueness
interaction1	0.8068	0.3491
interaction2	0.8467	0.2831
interaction3	0.8615	0.2577
interaction4	0.8370	0.2994
interaction5	0.7862	0.3818
interaction6	0.7628	0.4181
interaction7	0.8477	0.2814
interaction8	0.8442	0.2874

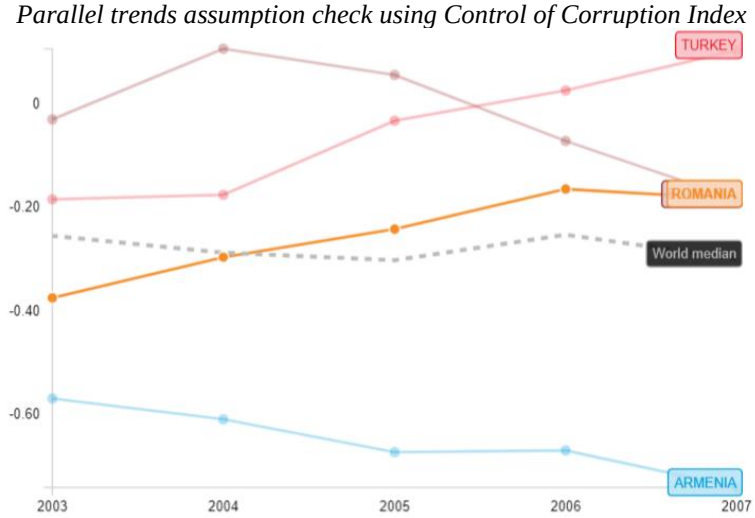
Appendix A2

Reliability analysis

Item	Obs	Sign	item-test correlation	item-rest correlation	interitem covariance	alpha
bribe1	111742	+	0.8143	0.7411	.6937199	0.9161
bribe2	112825	+	0.8361	0.7769	.7043874	0.9128
bribe3	109794	+	0.8534	0.8030	.7028937	0.9119
bribe4	112166	+	0.8289	0.7686	.7073159	0.9137
bribe5	111406	+	0.8017	0.7228	.6883473	0.9181
bribe6	114252	+	0.7877	0.6917	.6834366	0.9222
bribe7	109084	+	0.8305	0.7791	.7263532	0.9147
bribe8	109235	+	0.8292	0.7756	.7216738	0.9146
Test scale					.7035436	0.9252

APPENDIX B: PARALLEL TRENDS ASSUMPTION

Parallel trends assumption check using Control of Corruption Index



Clarification: There is an overlap in the name tags. The orange line represents the trend for Romania while the purple line represents the trend for Bulgaria.

Source: https://tcdata360.worldbank.org/indicators/hc153e067?country=ROU&indicator=364&countries=ARM,BGR,TUR&viz=line_chart&years=2003,2007

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