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HOW DOES EDUCATION INFLUENCE INDIVIDUALS PERCEPTION OF DIFFERENT TYPES OF CORRUPTION?

A quantitative study including 21 European countries.

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Abstract

Do individuals with different levels of education perceive different types of corruption differently? Evidence from previous research suggest that education plays an important role in the fight against corruption. Countries with higher levels of education on average experience lower levels of corruption. However, how does education influence individual's corruption perception? Specifically, different types of corruption. This paper uses the distinctions "need" and "greed" corruption. I suggest that individuals with lower levels of education perceive higher levels of need corruption because of lack of resources, shorter time horizons and lack of knowledge. I also suggest that individuals with higher levels of education perceive higher levels of greed corruption. This is because education has shown to increase cognitive ability, political efficacy, knowledge and longer time horizons. Greed corruptions consequences have longer time horizons compared to the consequences of need corruptions, which should explain some of the differences in corruption perception. Using survey data from the European Quality of Government database, I show that individuals with different levels of education differ in their perception of both need and greed corruption. The results of the quantitative study show that individuals with lower levels of education perceive more need corruption. The results also shows that individuals with lower levels of education perceive more greed corruption.

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1. Introduction

Corruption has always been a part of social interactions since the beginning of humanity and in its essence corruption is the abuse of public position and the entrusted office for private gain (Graycar, 2015). The manifestation of corruption can be ways like bribery, extortion, or conflict of interest (Graycar, 2015). Corruption is both a constant theme in the interaction between humans and a phenomenon correlated with many negative societal factors. The negative effects of corruption can be seen in important societal features like economic growth, interpersonal trust, infant mortality rates and many more (Sundström & Stockemer, 2015). Corruption is also correlated with lower civic participation which is a crucial building block for democratic systems (Sundström & Stockemer, 2015).

When it comes to counteracting corruption, it has been discussed ever since Plato and Aristotle that different political systems need different citizens to function at their best potential. It is argued that democratic states need well informed citizens for their systems to work (Galston, 2001). The causal mechanism between education and corruption has been debated for some time but there exists a consensus that a negative relationship between the two factors exists (Sundström & Stockemer 2015. Eicher, García-Peñalosa & Ypersele 2009. Glaeser, Ponzetto & Shleifer 2007. Wallis 2004). Education is a central piece of the puzzle for creating well-informed citizens and well-informed citizens are crucial for making intelligent voting decisions for well-functioning democracies (Galston, 2001). Education increases individual's cognitive ability that leads to knowledge spillover and economic growth, (Dee, 2004). Individuals with higher cognitive ability, more knowledge and interested in the democratic process are more likely to identify corrupt and incompetent politicians (Milligan, Moretti and Oreopoulos, 2004).

This paper aims to investigate the relationship between individuals with different levels of education and the individual's perception of different types of corruption. The central question is if the level of education influences an individual's perception of need and greed corruption. How individuals perceive corruption levels and different kinds of corruption might be the start to better understanding the relationship of education with corruption. The goal of this paper is to investigate and further build on previous research on how and why education affect levels of corruption. My contribution to this research area is the aspect of corruption perception from the individual perspective. This research area has gotten little

attention compared to national level analysis, as have the differences in types of corruption. This paper investigates education's effect on corruption perception of need and greed corruption on an individual level through a statistical analysis from the EQI 2017 dataset.

This paper is structured as follows: The thesis starts with a literature review of previous relevant research that the paper uses and builds upon to create the theory. The literature overview contains two main themes of previous research that are being presented, education's effect on a societal level and the effect of education on an individual level. The theory builds upon previous research on need and greed corruption and argues that individuals with different levels of education have different predispositions to perceive different types of corruption. Afterwards, I proceed to present the data and methods used in the analysis. In the methods part of the thesis internal and external validity are examined and discussed. The subsequent section of the paper presents the results of the quantitative study about education's effects on individual corruption perception. The final section of the paper is a discussion of the results and potential implications tied back to previous research findings and implications for future research.

2. Previous literature

In this section of the paper, I provide an overview over the different arguments and findings of previous research, how education affects corruption both on a societal level and on an individual level.

2.1 Influence of education on a societal level

As was stated in the introduction, education is important to create well-informed citizens that can make appropriate voting decisions in elections. Political knowledge affects the acceptance of different democratic principles and political participation that are crucial factors for a functional democratic state (Galston, 2001). According to Galston (2001), the combination of a free press and high education creates an environment for free institutions. The two factors of free press and informed, well-educated citizens reduces information asymmetry, transaction costs and improves accountability. This combination creates good settings for battling corruption.

Education plays the role of ensuring that information is being absorbed to its full potential by the citizens (Milligan, Moretti and Oreopoulos, 2004). A central part of education's effect on political behavior is that it has been shown to increase cognitive ability that is needed to effectively participate in a representative democracy. It increases citizens' ability to vote for competent leaders and allows them to have knowledge about the issues they are voting on. One of the functions of education is that it helps with identifying potential excesses of the government and recognize corruption. A second channel through which education affects civic participation is by increasing political interest (Milligan, Moretti and Oreopoulos, 2004).

Furthermore, education helps counteracting corruption by building social trust between groups and individuals. Education reduces corruption because it creates strong social bonds between different groups in society. Social trust, in turn, is correlated with lower levels of corruption (Rothstein and Uslaner, 2006). Education is also used to establish a common set of values and an identification with the nation (Rothstein and Uslaner, 2006). This helps reduce conflicts inside the nation and between groups. Another important function of education is that it builds a nation's human capital to increase economic growth and the quality of institutions (Uslaner and Rothstein, 2016).

Social trust is correlated with many important factors and is built through universal programs like education. Education not only increases trust between individuals and groups but also towards the political process and the political institutions. An important factor for reducing economic inequality and to increase the equality of opportunity is to increase education levels. According to Uslaner and Rothstein (2016), these two factors are important for building social trust and a general trust in the political system. Economic equality and equality of

opportunity are also important factors for economic growth and increasing the political stability inside a country, (Uslaner and Rothstein, 2016).

2.2 Influence of education on an individual level

Previous research has put a lot of focus on education's importance on a societal level, but education also affects individual's behavior. Education increases literacy and knowledge of citizens and helps individuals to make intelligent and informed decisions in the political process (Dee, 2004). A function of education is that it increases an individual's civic participation and general interest in the democratic process. Education also increases individual's cognitive ability, which leads to knowledge spillover and economic growth (Dee, 2004). Individuals with higher cognitive ability and, more knowledge and interest in the democratic process are more likely to identify corrupt and incompetent politicians (Dutta and Sanjukta, 2013). Educated individuals are more likely to complain about misconduct and bad governance (Botero, Ponce and Shleifer, 2013).

Individuals with higher education are also more likely to understand complex political and economic problems that they are voting on, (Dee, 2004). Individuals with higher education are more likely to report misconduct both in the welfare system and in the political process. When the reporting of corruption increases the risk for public servants and politicians to get caught increases and this lowers the corruption, (Botero, Ponce and Shleifer, 2013).

Individuals with higher education are also able to use and process complex information that is presented to them. Free press is an important factor to fight corruption, but the free flow of information can only take effect if it is presented to individuals that can process and understand the information (Dutta and Sanjukta, 2013).

What is missing in the literature that this paper aims to contribute to is if education and the ability to understand and process complex information influences individual's corruption perception of different types of corruption. Previous research has shown that citizens perception of different types of corruption leads to varied amount of uprising and frustration towards the political system (Bauhr, 2016). If education influences an individual's perception

of different types of corruption this could have interesting implications when it comes to our understanding of education's influence on corruption levels on a societal level.

2.3 Political efficacy and Education

Political efficacy is a central part in democratic systems, citizens trust in their ability to change the political system and individual's belief that they can understand and influence complex political affairs.

Citizens with higher education perceive themselves more politically competent and have a higher belief in their ability to make a difference in the political system, (Rasmussen et al, 2018). Education increases political efficacy because it makes individuals more motivated and cognitively able to understand politics. Individuals with higher education may also acquire social status, networks and other resources that are important to engage in politics, (Rasmussen et al, 2018). Education makes a significant difference in developing civic knowledge, skills and attitudes towards the political system. Learning and discussing civic and political issues increases both civic knowledge and engagement, (Galston, 2007). Individuals that receive a higher level of education especially when it comes to civic education have shown a significant increase in political efficacy, higher rates of political attentiveness and overall levels of knowledge regarding the political system, (Pasek et al, 2008).

3. Theory

In the theory part of the paper, relevant previous research mainly focusing on need and greed corruption by Bauhr (2016) will be built upon to form my theoretical framework and arguments for education's influence on corruption perception. This part of the paper puts forward arguments why different levels of education could affect individual's perception of different types of corruption. Finally, two hypotheses are presented to condense the arguments that are presented in the text.

3.1 Need and Greed Corruption

Previous research has mainly focused on petty and grand corruption to differentiate corruption and help contribute to the understanding how different types of corruption can influence different political systems based on contextual factors. New definitions were recently put forward by Bauhr (2016), need and greed corruption. The differentiation of these types of corruption is useful to analyze how corruption is not just one big concept but can express itself differently in different context and have different impacts on society based on specific contextual factors.

Need corruption encompasses things like access to public offices, avoid abuses by the police or access to basic welfare services (Bauhr, 2016, p.562). Greed corruption is defined as gaining special illicit advantages, which leads to concealment and disengagement of citizens but is not perceived to be as bad as need corruption by them (Bauhr, 2016, p.562). An example of this could be bribing politicians for market shares/monopoly or buying state contracts through illegal channels.

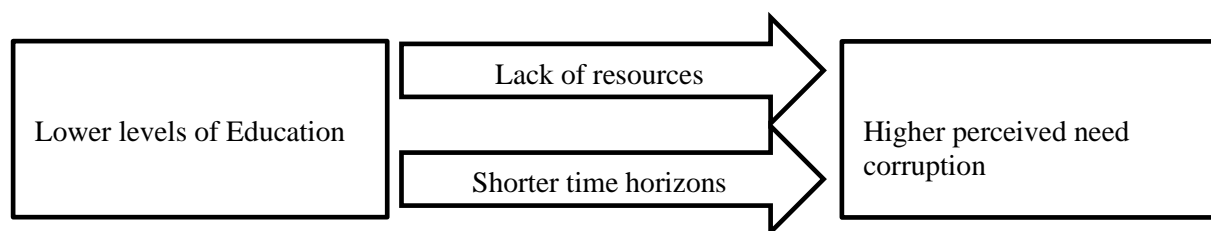
3.2 Why individuals with lower levels of education perceive more need corruption

The consequences of need corruption are much closer to the individual and affect their personal life in a shorter time horizon compared to greed corruption. Need corruption should affect individuals with lower levels education harder because they might lack knowledge about their rights and how the system is supposed to work. Individuals with lower levels of education also might lack the resources to get around need corruption, these resources that are lacking could be time, money, networks and knowledge. Individuals with higher education may acquire social status, networks and other resources that are important to engage in politics, (Rasmussen et al, 2018).

This leads to individuals with lower levels of education having to go along with the demands of paying extra for basic welfare services or not being abused by the corrupt system. Therefore, I expect individuals with lower levels of education to have a higher perception of need corruption compared to individuals with higher levels of education.

Education leads to increased cognitive ability that makes it easier to process complex political information, (Dee, 2004). Higher educated individuals have longer time horizons in their decision making (Potrafke, 2012), and this in turn effects their reaction to different kinds of corruption that have different time horizons in their negative consequences. Because need corruptions consequences have a short time horizon in its negative effects, individuals with lower levels of education will perceive more need corruption because they have a shorter time horizon.

Hypothesis 1: Individuals with lower levels of education will perceive higher levels of need corruption compared to individuals with higher levels of education.



3.3 Why individuals with higher levels of education perceive more greed corruption

Education makes a significant difference in developing civic knowledge, skills and attitudes towards the political system. Learning and discussing civic and political issues increases both civic knowledge and engagement (Galston, 2007). Individual's that receive a higher level of education especially when it comes to civic education have shown a significant increase in political efficacy, higher rates of political attentiveness and overall levels of knowledge regarding the political system (Pasek et al, 2008).

Individuals with higher education can use and process complex information (Dutta and Sanjukta, 2013), which in turn will help individuals with higher education to understand greed corruptions consequences better compared to individuals with lower levels of education.

Education also increases political efficacy because it makes individuals more motivated and cognitively able to understand the complex political system. Individuals with higher

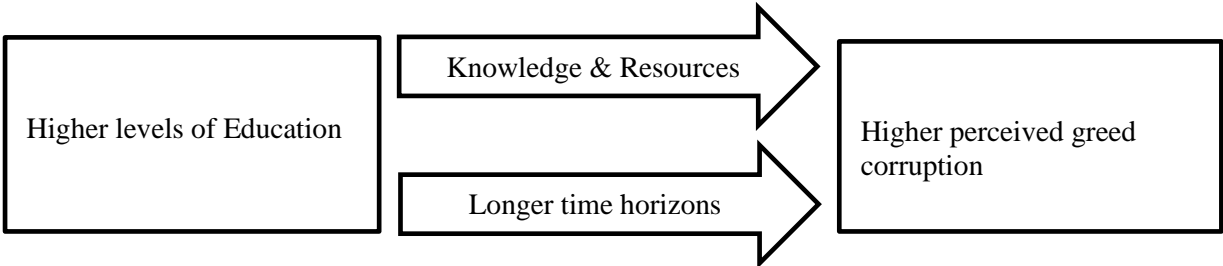
education may also acquire social status, networks and other resources that are important to engage in politics (Rasmussen et al, 2018).

Individuals with higher education also might be more personally affected by greed corrupting. They might be competing for the same positions and state contracts. This in turn increases the perception of greed corruption. Individuals also might be more personally involved in the political process and get knowledge of greed corruption through information channels such as specific networks that is not available to individuals with lower levels of education. The perception of different types of corruption could just be an effect of how much personal interest you have in the specific corruption type both if you are hurt by the system or gaining ill advantages.

As presented in previous section education leads to increased cognitive ability that makes it easier to process complex political information (Dee, 2004). Higher educated individuals have longer time horizons in their decision making (Potrafke, 2012), and this in turn effects their reaction to different kinds of corruption that have different time horizons in their negative consequences. Greed corruptions negative effects have a longer time horizon than need corruption, and individuals with higher education have longer time horizons.

If individuals are involved in the political process and have a good understanding of it, corruption and unfair playing rules should make individuals react more harshly to corruption. Therefore, I expect individuals with higher levels of education to perceive more greed corruption compared to individuals with lower levels of education.

Hypothesis 2: Individuals with higher levels of education will perceive more greed corruption than individuals with lower levels of education.



4. Method

In this part of the paper the research design, method and data are presented. Reasons for choosing the specific dataset, independent variable, dependent variables, and control variables are discussed and how the theoretical definitions are captured in the chosen variables to ensure good internal validity in the analysis. This section closes with a discussion about the potential limits with the data and method.

4.1 Research design

To conduct the investigation into the relationship between education and individual's perception of different types of corruption the paper will be performing a quantitative research design. The approach to data usage in the paper is to use all the data available from all European countries that are included in the dataset and control for as many relevant confounding variables as possible. This approach is to ensure that the paper has strong validity and minimizes the risk of the results being spurious. The paper will use one independent variable that is levels of education and two dependent variables, need and greed corruption perception. To present the results of the statistical analyses, regression analyses will be used to show the effect of education and perception of different types of corruption. Regression analyses are good tools to show and investigate the effects when controlling for other variables. The overall approach of the research design is to assure that the results can be applied on European democracies by using all 21 European countries that are included in the dataset. The external validity will be strong when it comes to European democracies, but the results cannot without further investigation be applied to other types of regime types because the dataset only included European democracies. Other countries with other forms of political systems and cultural contexts will need their own studies.

4.2 Dataset

The dataset used to conduct this paper's statistical analyses on individual's perception of different types of corruption is the QoG European Quality of Government Index Survey Dataset 2017. This dataset is unique in that it includes data on individual's perception of different types of corruption. The dataset includes questions regarding need and greed corruption that this paper's research focus lies on. The individual level dataset includes survey data from 21 European countries that makes the data both contained to a European context but also diverse in having multiple different countries with various corruption contexts. It includes in total 77,966 respondents, which makes sample size relatively big which improves the validity of the results produced by the paper. The average number of respondents per country are 3,712 with France having the most with 10,422 respondents. Croatia and Ireland having the least with 900 respondents each. The sampling method for the individual survey dataset was random sampling and the sampling unit are individuals that are 18 years or older. The survey data was collected by telephone interviews. For the random sampling method, the data was collected using the next birthday method, to ensure regional diversity respondents had to confirm postal code from the phone number they were using, (EQI Code handbook, 2017, p.4). This dataset is appropriate because it includes a big sample size of respondents and includes relevant questions for my research question. The dataset comes from the QoG institute that is a renowned research institute and it can be assumed that the dataset's reliability is good. The sampling method (The next birthday method) used in the dataset also increases the validity that minimizes risk of the results being invalid.

4.3 Operationalization of Dependent variable

This paper aims to investigate if education affects individual's perception of different types of corruption. The corruption types are need and greed and the definitions for these types of corruption are:

Need corruption: Access to public offices, avoid abuses by the police or access to basic welfare services (Bauhr, 2016, p.562).

Greed corruption: Greed corruption is defined as gaining special illicit advantages (Bauhr, 2016, p.562). An example of this could be bribing politicians for market shares/monopoly or buying state contracts through illegal channels.

The paper's operationalization of these theoretical definitions into measurable variables is done by using survey questions from the EQI dataset. For the operationalization of need corruption, the "Q16_1" variable is used:

"2.2.16 q16a - People in my area must use some form of corruption to just to get some basic public services. "

Note: Source: EQI, 2017, Code handbook, p.10

This question was structured in a way that respondents could answer on a scale from 1-10 with 1 - Strongly disagree to 10 -Strongly agree. There was no need to recode missing values as they were already coded correctly and as the variable is coded in such a way that higher values represent higher corruption perception, no changes to the scale were necessary either.

For the operationalization of greed corruption, the variable "Q16_2" is used:

"2.2.17 q16b - Corruption in my area is used to get access to special unfair privileges and wealth."

Note: Source: EQI, 2017, Code handbook, p.10

This question was also structured in a way that respondents could answer from 1-10 with 1 - Strongly disagree to 10 - Strongly agree. There was no need to recode missing values as they were already coded correctly and as the variable is coded in such a way that higher values represent higher corruption perception, no changes to the scale were necessary either.

These two questions produce good internal validity in my results because they capture my theoretical definitions well. Need corruption is phrased as basic public services and greed corruption as unfair privileges and wealth, these captures my theoretical definitions given in the theoretical part of the paper. Both questions included all 77.966 respondents from the dataset that also strengthens the external validity. The internal validity of the questions can be

assumed to be rather high as well, as other studies, such as work by Bauhr and Charron (2020) also relied on this measurement when investigating gender differences in perception of need and greed corruption.

4.4 Operationalization of Independent variable

The operationalization of education in this paper will be based on the level of education respondents graduated from. In the dataset education is measured in the variable “2.4.2 d2 - Education of respondent”. Education of respondents was measured in five levels:

- (1) Elementary (primary) school or less (no diploma)
- (2) High (secondary) school (but did not graduated from it)
- (3) Graduation from high (secondary) school
- (4) Graduation from collage, university or other third-level institute
- (5) Post-graduate degree (Masters, PHD) beyond your initial collage degree
- (6) Don't know/Refused

Note: Source QoG European Quality of Government Index Survey Dataset 2017

The original variable “2.4.2 d2 - Education of respondent” from the dataset was recoded to remove “Don't know/Refused”. Out of the 77,966 total number of respondents, 235 respondents had answered “Don't know/Refused” and were therefore coded as missing values. High values in the education variable corresponds with higher levels of education.

This measurement of education is a good operationalization of what this paper aims to have as its independent variable. The hypotheses of this paper builds upon that higher education has an effect on perception of different types of corruption and this operationalization of education captures higher education within this variable. An alternative measurement of education could have been for example average years of schooling. This measurement could have given a more comprehensive picture of the socialization into education rather than formalizing education as degree achievement. However, as no such measurement of education is included in the dataset, I have to rely on graduation instead. The measurement that is used

now is graduation from different education levels and this measurement could miss people being in school for several years but not finishing their diploma.

4.5 Control variables

Control variables used in this quantitative analysis are country, income, gender, age and occupation by sector. All control variables that are used in the regression analyses are from the (EQI, 2017) dataset. This part will describe what the control variables captures and how they were established in the (EQI, 2017) dataset. Arguments why the control variables were included in the analyses will also be presented.

Income is important to control for because of its potential impact on individuals' resources and time to allocate to corruption perception. If you have more resources you potentially could have more or less personal interest in the different corruption types this paper aims to investigate. Differences in income could potentially also affect how individuals perceive the different types of corruption that the paper investigates. Income is also important to control for because it can affect individual's education level. Richer individuals might be able to finish a higher level of education compared to a individual with lower income. The dataset included a variable for individual's household income that is used for controlling for income. The variable used is "2.4.4 d4 – Household income" – "Total household net income per month, after taxes. Stated in Euros (€). "Don't know/Refused" is coded as 99." Source: (EQI, 2017, Codehandbook, p.15)

The variable had to be recoded to set the "Don't know/Refused" answer to missing.

The range of income in the dataset varied between the lowest 100 Euro net income per month to the highest 2.600.000 euro net income per month.

Occupation by sector is used as a control variable because it could affect an individual's perception of different types of corruption and corruption perception in general. If an individual works in the public sector this individual might have more insight and knowledge about a specific type of corruption and knowledge of corruption in general. If an individual works in the private sector this individual might have more direct experiences with a certain type of corruption that is needed in their line of work. It is hard to argue how occupation by

sector could affect an individual's education level but some positions might demand that you have a certain level of education that makes individuals pursue a higher level of education.

The variable “2.4.7 d5a – *Occupation by sector*” is used from the dataset:

“As far as your current occupation is concerned, would you say you work in the public sector (a public sector organization is either wholly owned by the public authorities or they have a majority share), the private sector or would you say that you are without a professional activity?”. This question included 4 options:

- (1) Public sector
- (2) Private sector
- (3) Without professional employment
- (4) Don't know/Refused

Note: Source EQI, 2017, Codehandbook, p.15.

The variable had to be recoded because it included a “*Don't know/Refused*” answer. 574 responses were set to missing.

Gender is important to control for because male and females could potentially perceive the different corruption types differently. Bauhr and Charron (2020) found in their study that male and females perceive need and greed corruption differently and this strengthens the argument for controlling for gender in the analysis. Another important reason to control for gender is the gender education gap that is well documented in the literature, traditionally males have been educated to a higher degree than females but in western democracies this gap has decreased in recent years. To control for gender the variable “2.4.1 d1 – *Gender of respondent*” is used. The two options in this variable were “(1) *Male* and (2) *Female*”, (EQI, 2017, Codehandbook, p.15).

Age is controlled for because age could affect both level of education and corruption perception of different types of corruption. The respondents in the dataset had to be 18 years or older. An 18-year-old individual cannot have reached the highest level of education “Post-graduate degree (Masters, PHD) beyond your initial collage degree”. This makes it important to control for age from the education aspect. Age could also potentially affect what type of corruption you perceive, a young and an old individual might perceive corruption differently in general. This makes it important to control for age from the corruption aspect as well. The

variable “2.4.3 *d3 – Age of respondent*” is used. This variable included an individual’s age in years, (EQI, 2017, Codehandbook, p.15). The variable had to be recoded because it included a “Don’t know/Refused” option. There were 1,904 respondents that were recoded as missing values.

Country as a control variable is used to control for national level differences and contextual factors around corruption perception. By controlling for country, contextual factors that have shown to affect corruption levels are controlled for. Some examples of these contextual factors are level of democracy, freedom of speech, freedom of the press, transparency, quality of institutions. By controlling for country, it removes the risk of the contextual factors within countries affecting the results because contextual factors can affect the level of education that individuals can achieve. How both the education system within different countries differ is an important factor as well as actually corruption levels and different contextual factors around corruption perception. The dataset includes 21 European democracies that makes the applicability of the result limited to European democracies. The external validity is limited to these systems and cannot be applied to other types of political systems or countries with different contextual factors. The variable used for controlling for country from the dataset: “2.1.3 *COUNTRY – Country of respondents*” from the (EQI, 2017, Codehandbook, p.6).

Summary statistics of the variables included in the analysis as well as graphs illustrating the distributions of the main variables (levels of education and need and greed corruption perceptions) are included in Table 4, Table 5 and Table 6 in the appendix. Table 1 in the appendix presents a list of the countries included in the dataset and the analysis.

4.6 Limits with the dataset

The QoG European Quality of Government Index Survey Dataset 2017 that is used for the statistical analyses in this paper relies on people answering survey question. There are risks with the data that people do not answer the questions honest when it comes to corruption perception because of social desirability or that they do not understand the questions definitions. The data was collected by telephone interviews and this runs the risk of respondents experiencing different interviews even though the specific questions are the

same. Different interviewers with different interviewing skills and techniques run the risk of influencing the respondents' answers. The dataset also has limitation when it comes to external validity. The dataset only includes European democracies, which makes the results only applicable to countries with the same contextual factors and political systems. The results cannot be applied on other countries with different contextual factors and/or different political systems. To generalize the results on countries with different contextual factors further research and investigation will need to be done.

5. Result

In the results section of the paper a correlation matrix will be presented to get an overview of the correlations between the independent, dependent and the control variables. After that, a series of regressions will be presented in which the effect of education on need and greed corruption will be assessed. After each regression, the results will be shortly discussed and interesting differences between the regressions will be pointed out. Finally, the results will be compared to the theoretical framework of need and greed corruption and the two hypotheses will be contrasted to the results of the regressions.

Table 1: Correlation matrix of education, perceived need corruption, perceived greed corruption, income, age, gender, occupation.

	Need Corruption	Greed Corruption	Education	Income	Age	Gender	Occupation
Need Corruption	1	0.6597*	-0.1443*	-0.0118*	-0.0150*	0.0205*	0.0381*
Greed Corruption		1	-0.0866*	0.0403*	-0.0441*	-0.0054	0.0087*
Education			1	-0.0169*	-0.1466*	-0.0108*	-0.2391*
Income				1	-0.0236*	-0.0108*	-0.0414*
Age					1	0.0258*	0.3360*
Gender						1	0.0301*
Occupation							1

Notes: * $p < 0.05$

In Table 1 we can observe that need and greed corruption perception are positively correlated and that the correlation is significant. Education, the main independent variable, is negatively and significantly correlated with both corruption types, but the correlation is stronger in need corruption, with the correlation coefficient almost double the size of the correlation of education with greed corruption. Income has a very small negative correlation with need corruption and a very small positive correlation with greed corruption perception. Gender's correlation with need corruption is positive and significant at a significance level of $\alpha = 0.05$, which could indicate that females perceive more need corruption compared to males. Gender's correlation with greed corruption is negative but not statistically significant. This relationship between gender and perceive need and greed corruption is supported by the findings of Bauhr and Charron (2020) in their study where they found that females perceive

more need corruption than males and males perceive more greed corruption compared to females. Age has a negative correlation with both need and greed corruption, but the correlation is larger with greed corruption than need corruption. This is an interesting correlation that could be explained because you build more knowledge and wealth when you age that could indicate that you would perceive more greed corruption. Age could influence the same parameters that education is theorized to influence in theoretical framework.

The correlation we see in the correlation matrix are only indicators and a way to get a glance at the relationship between the variables. To investigate the direction of the relationships and to test whether the relationship remains the same when controlling for confounding variables we need to use regression analysis.

Table 2: Results of OLS regressions of need corruption on education level.

	Model 1	Model 2	Model 3	Model 4	Model 5
High school (no grad)	-0.0691 (-1.55)	-0.129* (-2.37)	-0.144** (-2.63)	-0.138* (-2.52)	-0.127* (-2.32)
High school (grad)	-0.341*** (-8.40)	-0.361*** (-7.25)	-0.389*** (-7.68)	-0.385*** (-7.61)	-0.367*** (-7.19)
Third-level institute	-0.587*** (-14.10)	-0.667*** (-13.10)	-0.708*** (-13.64)	-0.706*** (-13.60)	-0.671*** (-12.78)
Post-graduate	-0.912*** (-19.94)	-1.021*** (-18.30)	-1.063*** (-18.78)	-1.058*** (-18.68)	-1.013*** (-17.64)
Income		-0.000000721 (-1.77)	-0.000000754 (-1.85)	-0.000000711 (-1.74)	-0.000000651 (-1.59)
Age			-0.00299*** (-4.19)	-0.00303*** (-4.25)	-0.00415*** (-5.26)
Female				0.0969*** (4.09)	0.102*** (4.24)
Private sector					0.125*** (3.87)
Without professional employment					0.183*** (5.25)
Constant	4.899*** (108.65)	5.002*** (93.33)	5.177*** (75.95)	5.124*** (73.89)	5.030*** (67.88)
R ²	0.136	0.164	0.163	0.163	0.164
N	77731	52123	51230	51230	51037

*Notes: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Data Source: QoG European Quality of Government Index Survey Dataset 2017).*

Countries was controlled for but for presentation. For a list of countries included in the analysis please refer to Table 1 in the Appendix. Base level of education is “primary/no education”; base level of gender is “male”; base level of occupation is “public sector”.

Table 2 presents the results of five OLS regressions on the perception of need corruption. Model 1 presents a bivariate regression of need corruption on education, while to each of the subsequent models one control variable was added at the time to the model. Model 6 shows the results of the full model including all variables. All models include country as a control, which was excluded from the Table for presentation purposes. For a list of countries included in the analysis, please refer to Table 1 in the Appendix. Figure 1 presents the results of Model 1 (bivariate model) and Model 5 (full model) visually in a coefficient plot.

In model 5 in Table 2, for every level of education, the results show a negative effect of higher levels of education on the perception of need corruption. The negative coefficient increases with every education level and all the coefficients are statistically significant. The negative coefficients are in relation to the base level of education that is elementary (primary) school or less (no diploma).

When holding everything else constant in Model 5 an individual that graduated from high school has on average a 0.367 point lower value on the need corruption perception scale compared with someone from the base level of education. An individual that graduated from a third-level institute has on average a 0.671 point lower value on the need corruption perception scale compared with someone from the base level of education. If an individual has post-grad education, they have on average a 1.013 point lower value on the need corruption perception scale compared with someone from the base level of education. This empirical result is in line with Hypothesis 1 that theorized that individuals with lower levels of education on average would have higher perceptions of need corruption compared to individuals with higher levels of education.

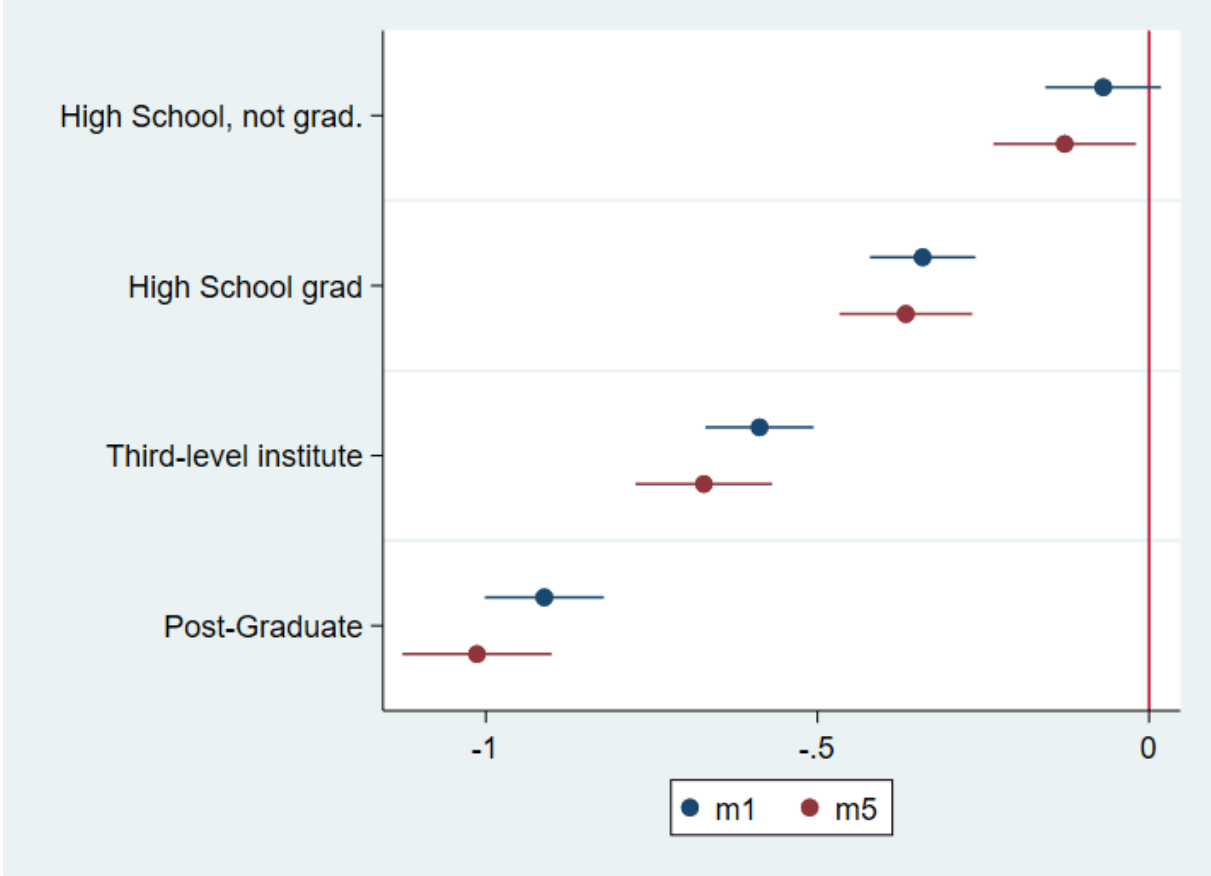
All control variables have statistically significant results except income when controlling for all other variables in Model 5. Age has a negative coefficient of 0.00415 which indicates that someone that is 50 years older will on average have a 0.2075 point lower value on the need corruption perception scale holding everything else constant. Being female has a positive

coefficient of 0.102 which suggests that on average, a female will have a 0.102 point higher value on need corruption perception compared to a male, when holding all other factors constant. This finding on gender's effect on need corruption perception is in line with the finding by Bauhr and Charron (2020). Working in the private sector has a positive coefficient of 0.125, which on average means that individuals working in the private sector will have a 0.125 point higher value on need corruption perception than individuals working in the public sector. Without professional occupation has a positive coefficient of 0.183, suggesting that that on average individuals without professional occupation will have a 0.183 point higher value on the need corruption perception scale than individuals working in the public sector.

The constant while controlling for all variables is 5.030 on the 1-10 scale that need corruption was ranked in dataset. This is the average expected level of need corruption perception if all other variables would have 0 or the base level in the categorical variables.

The R^2 value in the full model (Model 5) is 0.164, meaning that 16.4% of the variance in need corruption perception are explained by the model.

Figure 1: Coefficient plot of the results of Model 1 (bivariate model) and Model 5 (full model) for the effect of education level on need corruption.



Notes: Model 1 (bivariate model) = m1, Model 5 (full model) = m5. Both models can be observed in Table 2.

In Figure 1, we can observe Model 1 that is the bivariate model have significant results with only the category of High School, no graduation’s confidence intervals crossing the vertical 0 line which indicates a null effect In Model 1 only country was controlled for. In Model 5 all education levels have significant results without any of the horizontal lines crossing the vertical line. We can observe that while controlling for all variables in model 5 all the different education levels have negative coefficients with statistically significant results compared to the base level of primary/no education. The negative coefficients in Model 5 compared to Model 1 get stronger for all levels of education when controlling for all variables.

Table 3: OLS regression of greed corruption on education level.

	Model 6	Model 7	Model 8	Model 9	Model 10
High school (no grad)	0.149** (3.18)	0.0807 (1.41)	0.0416 (0.72)	0.0390 (0.68)	0.0360 (0.62)
High school (grad)	0.116** (2.71)	0.103* (1.97)	0.0332 (0.62)	0.0316 (0.59)	0.0304 (0.57)
Third-level institute	-0.0154 (-0.35)	-0.0675 (-1.26)	-0.154** (-2.82)	-0.155** (-2.83)	-0.146** (-2.65)
Post-graduate	-0.207*** (-4.30)	-0.317*** (-5.39)	-0.401*** (-6.72)	-0.403*** (-6.76)	-0.387*** (-6.39)
Income		0.000000825 (1.92)	0.000000754 (1.75)	0.000000736 (1.71)	0.000000686 (1.59)
Age			-0.00683*** (-9.08)	-0.00681*** (-9.06)	-0.00634*** (-7.64)
Female				-0.0415 (-1.66)	-0.0174 (-0.69)
Private sector					0.237*** (6.93)
Without professional occupation					0.126*** (3.44)
_cons	5.086*** (107.00)	5.205*** (92.15)	5.605*** (78.09)	5.628*** (77.05)	5.446*** (69.79)
R ²	0.121	0.141	0.144	0.144	0.145
N	77731	52123	51230	51230	51037

*Notes: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Data Source: QoG European Quality of Government Index Survey Dataset 2017).*

Countries was controlled for but for presentation. For a list of countries included in the analysis please refer to Table 1 in the Appendix. Base level of education is “primary/no education”; base level of gender is “male”; base level of occupation is “public sector”.

Table 3 presents the results of six OLS regressions on the perception of greed corruption. Model 6 presents a bivariate regression of greed corruption on education, while to each of the subsequent models one control variable was added at the time to the model. Model 10 shows the results of the full model including all variables. All models include country as a control, which was excluded from the Table for presentation purposes. For a list of countries included in the analysis, please refer to Table 1 in the Appendix. Figure 2 presents the results of Model 5 (bivariate model) and Model 10 (full model) visually in a coefficient plot.

While in Model 6 High school (no grad) has a positive significant coefficient, when adding control variables in following models the coefficient drops from statistical significance. Similarly, while High school (grad) has positive significant coefficient in Model 6 and Model 7 when adding additional controls this coefficient drops from significance in following Models. In the final model, Model 10, only third-level institute and post-grad education levels have statistically significant results, with both coefficients being negative. The negative coefficients are in relation to the base level of education that is elementary (primary) school or less (no diploma).

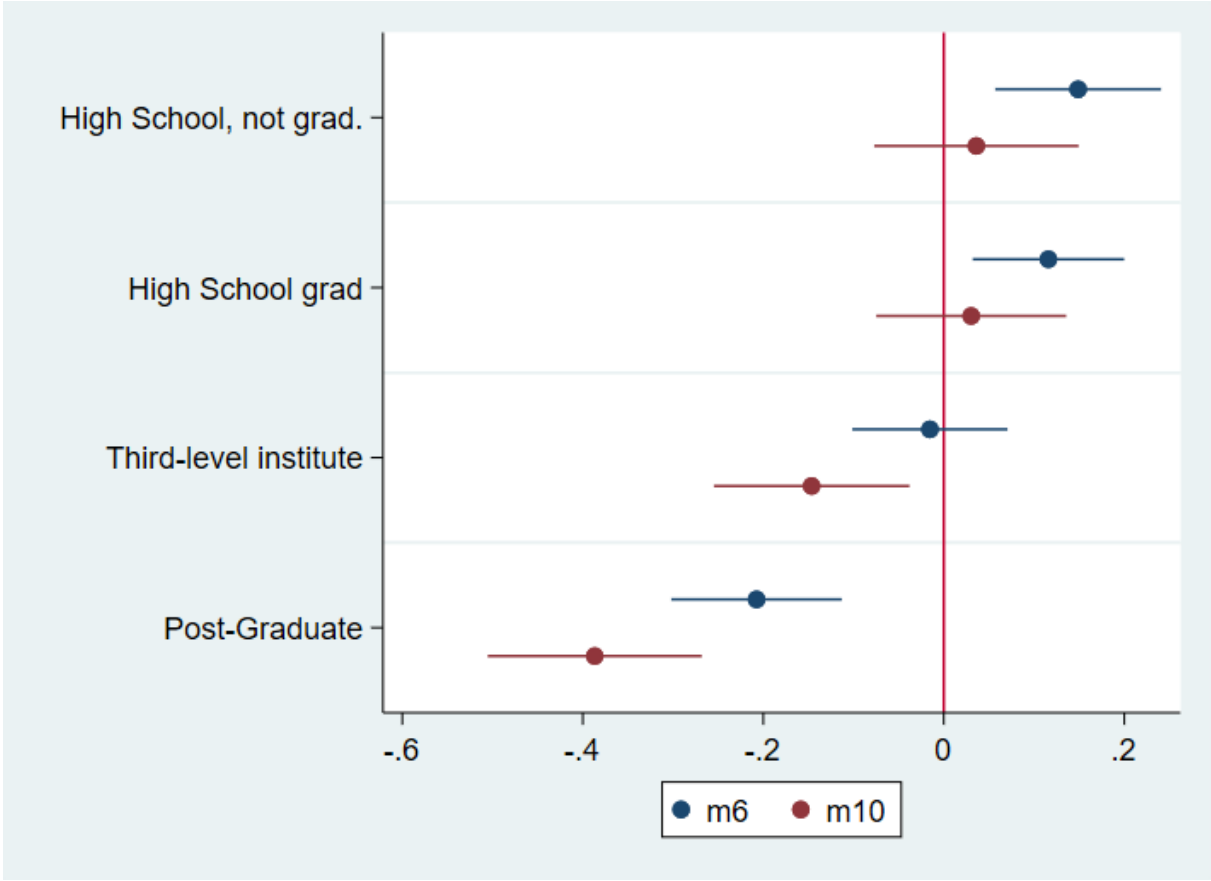
When holding everything else constant in Model 10, an individual that graduated from a third-level institute has on average a 0.146 point lower value on the need corruption perception scale compared to someone from the base level of education. If an individual has post-grad education, they have on average 0.387 point lower value on the greed corruption perception scale compared with someone from the base level of education. High school (no grad) and High school grad had no significant results. This contradicts the theoretical expectations formulated in hypothesis H2, that individuals with higher levels of education should have higher levels of greed corruption perception.

All control variables have statistically significant results except income and gender when controlling for all other variables in model 10. Age has a negative coefficient of 0.00634, which suggests that someone that an age difference of 50 years will translate on average to a 0.317 point lower value on the greed corruption perception scale, holding everything else constant. Working in the private sector has a positive coefficient of 0.237, which indicates that on average individuals working in the private sector will have an average higher value of 0.237 points on greed corruption perception than individuals working in the public sector. Without professional occupation has a positive coefficient of 0.126 suggesting that on average individuals without professional occupation will have a 0.126 point higher value on the greed corruption perception scale than individuals working in the public sector.

The constant while controlling for all variables is 5.446 on the 1-10 scale that need corruption was scaled on in the dataset. This is the average expected level of need corruption perception if all other variables would have 0 or the base level in the categorical variables.

The R^2 value in the full model (Model 10) is 0.145, meaning that 14.5% of the variance in need corruption perception are explained by the model.

Figure 2: Coefficient plot of the results of Model 6 (bivariate model) and Model 10 (full model) for the effect of education level on greed corruption.



Notes: Model 6 (bivariate model) = m6, Model 10 (full model) = m10. Both models can be observed in Table 3.

In Figure 2 we can observe Model 6 that is the bivariate model have three significant results with only third-level institute line crossing the vertical line. High school, no graduation and graduation from high school have positive coefficients with greed corruption perception, and post-graduate education in Model 6 having a negative coefficient. In Model 10, when controlling for all variables, high school, no graduation and graduation from high school have no significant results with the horizontal lines crossing the vertical line. Third-level institute and post-graduate both have significant results and negative coefficients.

5.1 Discussion of results

The results from Table 1 that presents the results of the analysis of education's influence on perception of need corruption in individuals is in line with the theoretical framework and with Hypothesis 1: Individuals with lower levels of education will perceive higher levels of need corruption compared to individuals with higher levels of education. All education levels had negative coefficients compared to the base level (elementary school or no diploma). The coefficients increase with level of education that shows that individuals with higher level of education perceive less need corruption compared to individuals with lower levels of education.

To resonate the arguments from the theory section, why individuals with lower level of education should perceive higher need corruption, individuals with lower levels of education are expected to have lower levels of knowledge of the political system and their own rights that would enable them to effectively combat need corruption when they encounter it. Individuals with lower levels of education are also assumed to lack resources to get around need corruption. Education increases individual's cognitive ability that increases their time horizon when it comes to consequences. Need corruption consequences has a short time horizon and individuals with lower levels of education have shorter time horizon compared to individuals with higher education, which should further increase their perception of need corruption.

The results from Table 3, that presents the results of the investigation of education's influence on perception of greed corruption in individuals is not in line with the theoretical framework and hypothesis 2: Individuals with higher levels of education will perceive more greed corruption than individuals with lower levels of education. Hypothesis 2 is therefore not supported by the results of the analysis presented in Table 3. Contrary to the theoretical expectations, individuals with higher levels of education had lower levels of greed corruption in the full model (Model 10).

The reasons for education's negative effect on greed corruption perception could be that just like with need corruption, education helps individuals to work around greed corruption. Individuals with higher levels of education have more resources at their disposal to fight and get around this type of corruption as well and might be better able to distinguish between greed corruption. Individuals with higher levels of education might not be as negatively affected of greed corruption compared to individuals with lower levels of education.

6. Conclusion

This paper investigates how education influences individuals' differences in different types of corruption. More specifically, I investigate the two corruption types, need and greed. I suggest that individuals with lower levels of education will perceive more need corruption. I also suggest that individuals with higher levels of education will perceive more greed corruption. Using the EQI (2017) data set that is a large survey containing almost 80,000 respondents in 21 European countries, I find empirical support for one of these claims. The empirical results show that individuals with lower levels of education perceive more need corruption compared to individuals with higher levels of education. The argument I use to explain this is based on previous research that have shown that education increases cognitive ability, increases time horizons, increases political efficacy and increases resources. The empirical results also show that individuals with lower levels of education perceive more greed corruption compared to individuals with higher education. This suggest that individuals with lower levels of education perceive more need and greed corruption. While I speculate about potential reasons for this finding, future research should further investigate why individuals with higher education tend to perceive less greed corruption than individuals with lower levels of education. The generalizability of the results in this paper is limited to European democracies because the respondents in the dataset was from 21 European democracies. Countries with different contextual factors will need their own survey data and empirical investigation to examine if the effects of education on individual corruption perception exists across these differences.

To the best of my knowledge, this is the first study that investigates how education influences individual's perception of need and greed corruption. The implications of the empirical findings are interesting because they showed that individuals with lower levels of education on average perceive more need and greed corruption. The differences in corruption perception between individuals with different education levels reveals an important problem in society with certain groups perceiving the system more corrupt than another group. Future research should pay more attention to this gap and where it stems from. A possibility to investigate this gap further could be qualitative research that focuses more on individual's motives and understandings of the political system and corruption, rather than a quantitative assessment of it. The finding of this paper also has important societal implications, as it raises the question how we can create a more equal society. Where the inequality between different groups in society stems from and how we can erase it is an important question because individuals that perceive the system as corrupt might make them less likely to participate in the political system and make them more likely to revolt against the perceived corrupt system. This insight might help to shape public policy in an attempt to reduce this gap in perceive corruption between groups in society.

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Dataset

(EQI, 2017) Charron, N., V. Lapuente & P. Annoni (2019). 'Measuring Quality of Government in EU Regions Across Space and Time.' *Papers in Regional Science*. DOI: 10.1111/pirs.12437 (European Quality of Government Index 2017)

8. Appendix

Table 1: List of countries

Country	Freq.	Percent	Cum.
France	10,422	13.37	13.37
Belgique	1,350	1.73	15.10
Bulgaria	2,400	3.08	18.18
Czech Republic	3,600	4.62	22.79
Slovakia	1,800	2.31	25.10
Hungary	2,800	3.59	28.69
Croatie	900	1.15	29.85
Romania	3,600	4.62	34.47
Finland	2,000	2.57	37.03
Italy	8,400	10.77	47.81
Grèce	1,620	2.08	49.88
Portugal	2,800	3.59	53.47
Danemark	2,250	2.89	56.36
Sweden	1,200	1.54	57.90
Germany	7,200	9.23	67.13
UK	5,400	6.93	74.06
Ireland	900	1.15	75.21
Austria	4,050	5.19	80.41
Netherlands	1,840	2.36	82.77
Poland	6,442	8.26	91.03
Spain	6,992	8.97	100.00
Total	77,966	100.00	

Table 2: Summary of distribution of education levels

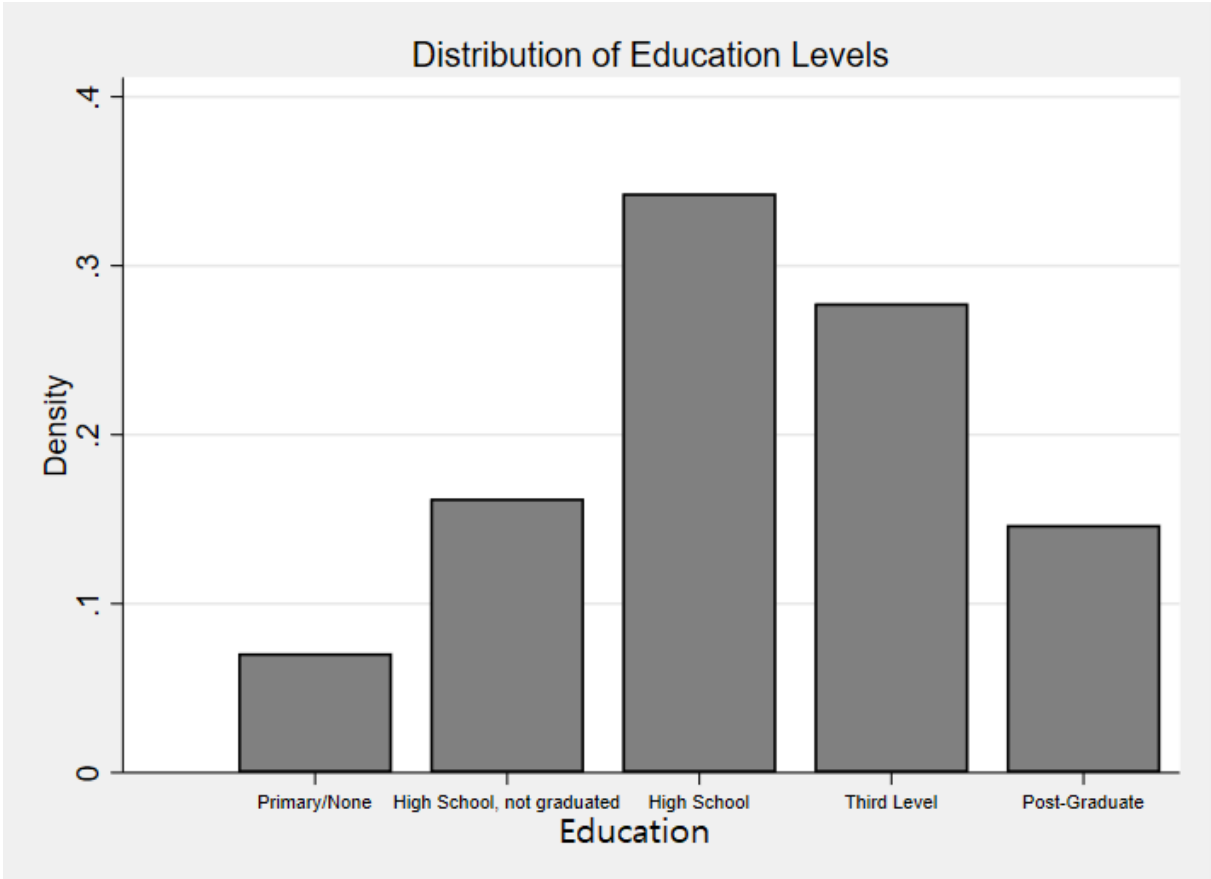


Table 3: Educations distribution - Countries

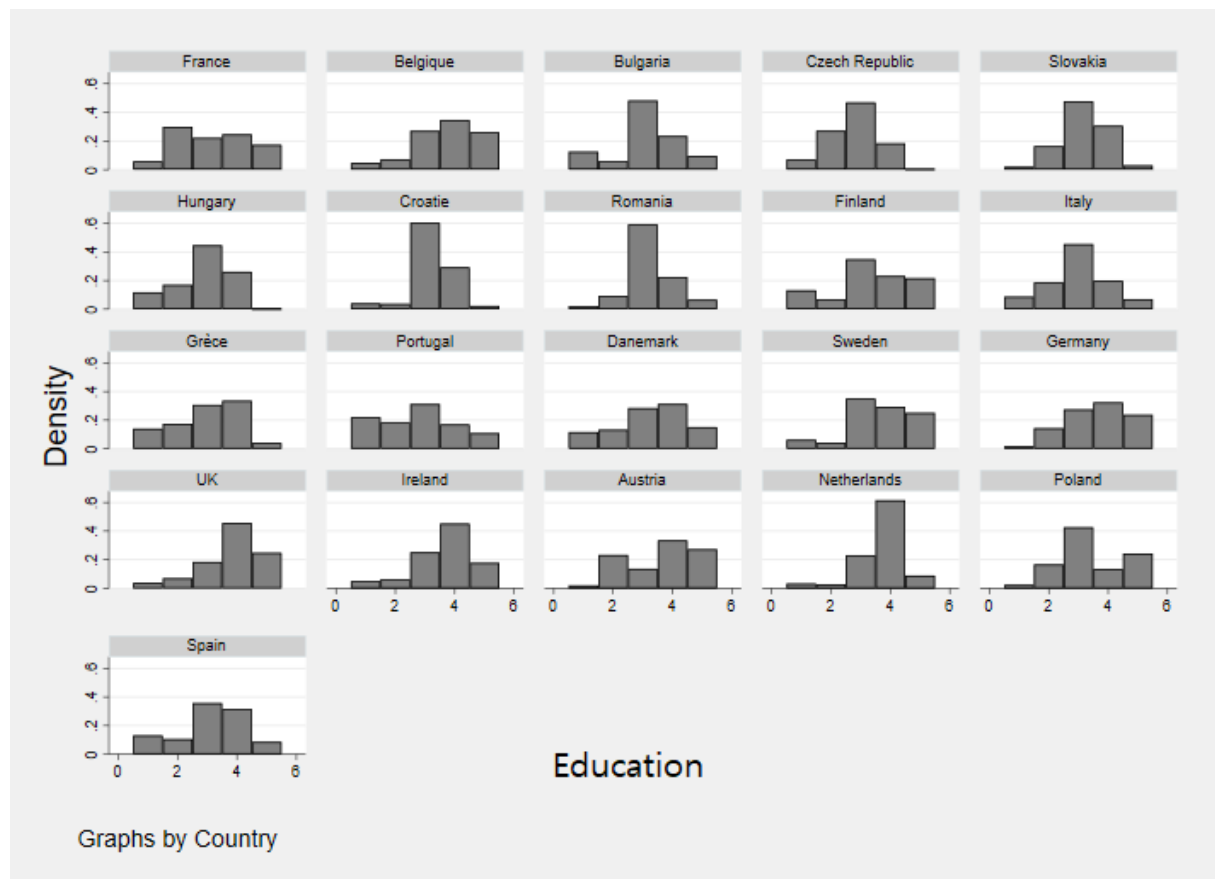


Table 4: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Need Corruption	77966	4.028	2.902	1	10
Greed Corruption	77966	4.808	3.032	1	10
Education	77731	3.267	1.112	1	5
Income	52193	11898.188	45627.936	100	2600000
Age	76062	49.195	17.179	18	97
Gender	77966	1.514	.5	1	2
Occupation	77392	2.199	.748	1	3

Table 5: Need Corruption distribution Graph

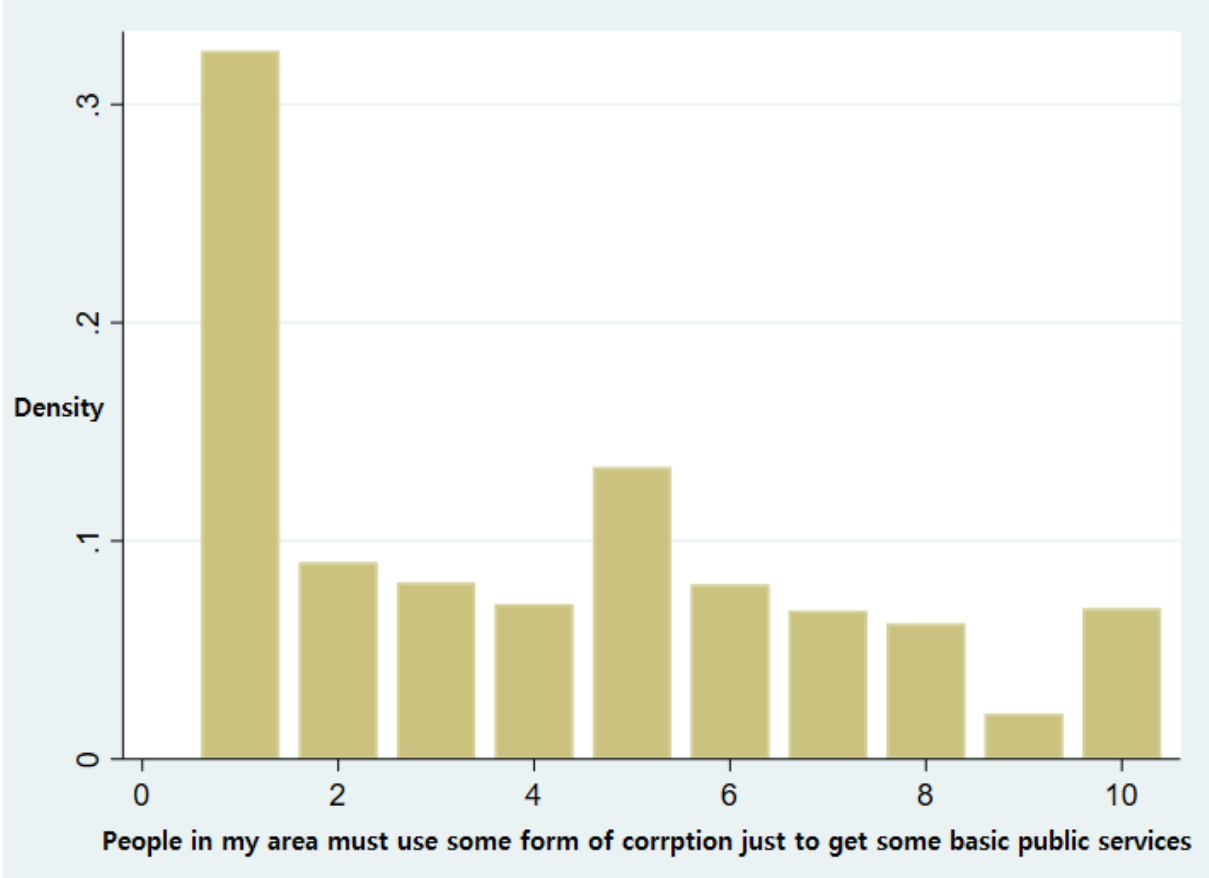


Table 6: Greed corruption distribution Graph

