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Corruption of the Press

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A Cross Country Panel Data Study of Corruption, Press Freedom and the Perceptions of Press Freedom

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Abstract

In this paper I investigate the relation between corruption and press freedom, perceived press freedom and the difference between press freedom and perceived press freedom as well as the causality of corruption on press freedom. My hypothesis is that corruption has a negative effect on both press freedom and perceived press freedom but that a higher level of corruption tends to make people believe the press is freer than it actually is. The methodological approach can be divided into two parts; first I run a set of cross-sectional regressions, with ethnolinguistic fractionalization as instrumental variable for corruption, on 29 European countries based on data from 2012, where the dependent variables varies between press freedom, perceived press freedom and the difference between press freedom and perceived press freedom; in the second part I run a panel data regression based on 45 European countries between 2005-2016, with press freedom as the only dependent variable. The results from the cross-sectional regressions suggest that corruption is significantly negative related to press freedom and that media concentration is significantly negative related to perceived press freedom. These results also suggest corruption being significantly negative related to the difference between press freedom and perceived press freedom, which implies that a higher level corruption tends to make people believe the press is freer than it actually is. The panel data regression however, shows that the causal effect of corruption on press freedom is negative but not significant.

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Introduction

In this section I motivate and give some background to the choice of subject. It also contains a short introduction to the methodological approach and the nature of data.

On March 26, 2017, media reported of crushed demonstrations in a number of major Russian cities. The demonstrations sought to protest corruption in the Russian government and to put light on the recent downturn of several democratic rights in the Russian society, a downturn that both protestors and non-governmental organizations claim to have gradually worsened in the last years (Filipov, 2017; Freedom House, 1). While the events were thoroughly covered in western media, it was barely, if not at all, mentioned in its Russian counterpart (Pinchuk and Shurmina, 2017). These events were followed up by new demonstrations in June the same year. Even this time the demonstrations sought to highlight the outspread and increasing corruption in the country, with the consequence of the arresting of more than thousand people (MacFarquhar and Nechepurenko, 2017). Just a few weeks after the first wave of Russian demonstrations in March 2017, Turkey held a constitutional referendum regarding an extension of the president's authority of power. The result was with the slightest of margins in favor of a yes, although some questions arose concerning the fairness of the vote. Nevertheless, it has been argued that an important contribution to the victory of the Turkish government supported yes-side was the fact that a majority of Turkish media is controlled by the state or government-friendly conglomerates, while most critical news organizations and journalists have been shut down or persecuted (Weise).

Russia and Turkey are two examples of countries where press freedom has declined in recent years and this tendency can also be seen on a more global scale. Freedom House's report of freedom of the press in 2016 accounts for its lowest global point in twelve years (Freedom House, 2, 3). One might think that the increased suppression and censorship of media that have been reported in many countries would be met by disappointment and disbelief among the citizens, but in reality this has not always been the case. Although the obvious skewedness in Russian and Turkish mass media reporting for example, both governments enjoy supports from a large part of the population (Rusli, 2017; Butler and Karadeniz, 2017). How is this possible? Maybe people are aware of the biasedness of the press but generally agree with the government anyway or maybe they do support the government because they believe the information provided by the press is critical and reliable.

According to some previous studies an outspread corruption can have negative and misleading effects on public media perception since it is closely linked to media concentration which in turn can form the public opinion to fit the interest of the big media players, not seldom with a close linkage to the government (McCormick, 1981; Kristof, 2014). But on the other hand, corruption is also believed to increase suspiciousness toward institutions etc. (Klapper, 1960; Rothstein and Uslaner, 2005). It is therefore of great interest to examine whether people are aware of the subsequent media biasedness due to corruption (if the perceived press freedom is affected), as well as how the perception of press freedom relates to the “real” press freedom (if people believe the press is freer than it actually is) and if these (hypothetical) differences can be explained by the present level of corruption. Due to the close linkage between corruption and media concentration it is also likely to assume that corruption is negatively related to press freedom. When it comes to the relation between corruption and press freedom the causal effect of press freedom on corruption has been thoroughly covered in the literature, but very few previous studies has examined the reversed causality, i.e. the causal effect of corruption on press freedom, and as far as I am concerned no such study has been conducted in a European context. This is the reason why this paper – in addition to the question of the relation between corruption and press freedom/perceived press freedom and the relation between corruption and the difference between press freedom and perceived freedom – also examines the relation and causal effect of corruption on press freedom.

My hypothesis concerning press freedom and perceived press freedom is that corruption is negatively related to both. When it comes to the difference between press freedom and perceived press freedom my hypothesis is – based on the fact that a majority of the citizens in countries such as Turkey and Russia still put a lot of trust in their governments – that a higher level of corruption tends to make people believe the press is freer than it actually is. Regarding the causal effect of corruption on press freedom my hypothesis is the effect being negative due to the close linkage to media concentration.

The research is set in a European context and as far as I am concerned, the relationship between corruption and press freedom/perceived press freedom has not been examined with this procedure in the literature so far, neither has the causality of corruption on press freedom in a European context. It is therefore of great interest and hopefully this paper can contribute and fill some gaps in the literature.

The hardest part in the research process of this paper was to find adequate data for perceived press freedom. While there are several indexes that annually measure the press freedom of different countries, such as the Reporters without Borders’ *World Press Freedom Index* and the Freedom

House's *Freedom of the Press Index*, there are no such counterparts when it comes to perceived press freedom. Luckily, the theme for European Social Survey Round 6 in 2012 was "Understanding and Evaluations of Democracy", in which the questionnaire included questions regarding media perception (the European Social Survey has so far released seven reports, one each second year since 2002, but only in 2012 were questions regarding perception of media included). This data will be the basis for the first of two sets of regressions. Hence the regressions investigating the relation between corruption and press freedom/perceived press freedom as well as the relation between corruption and the difference between press freedom and perceived press freedom will be based on cross-sectional data from the 29 European countries included in European Social Survey Round 6. In the second data set, where I more thoroughly examine the causal effect of corruption on press freedom, a panel data set covering all available European countries between 2005 and 2016 is used.

Chapter 2 covers theories and previous studies that can be related to the subject. In *Chapter 3* the included data in my analysis is described and motivated. *Chapter 4* provides a description of the methodology used for the two sets of regressions and it is followed by the results in *Chapter 5*. *Chapter 6* gives a conclusion based on the results and the theory. *References* and *Appendix* can be found at the end of the paper.

Previous Research

In this section theories from previous studies related to the subject is covered. It will later be applied in the conclusion in order to interpret and discuss the results from the regressions.

A study by Strömberg (2015, 1) discusses how a biased mass media through propaganda can affect the behavior of voters. The question of mass media's ability to "brainwash" people arose during the 1930s, due to Hitler's and Mussolini's effective use of radio propaganda, and some theories claimed that by exploiting cognitive mistakes voters make the media can manipulate voters to act against their own interests. This theory, that an intended message is directly received and generally accepted is referred to as the *hypodermic needle theory*. Based on a number of empirical studies, Klapper (1960) made the conclusion that mass communication in the short run more frequently reinforced the voter's prior views instead of changing them. However, as subsequent studies have shown, there are channels through which biased mass media affects people's behavior in the long run. By setting an *agenda* the media coverage of an issue makes people believe the issue is important; through *priming* people evaluate politicians based on the issue covered in media; and through *framing*, which is the assumption that the way in which an issue is described by the media influences how it is understood by the audience (Strömberg, 1). Strömberg found that agenda setting and priming systematically hurt voters without access to media and minorities whose issues are less covered. He also found that media has strong negative effects when there are conflicts of interest among different groups in the society, which the Rwandan Genocide and the pogroms in Nazi Germany are examples of.

The linkage to corruption, and a recurrent interpretation and suggestion examining the relationship between press freedom and corruption today, is the emergence of media concentration due to corruption. Media diversity and pluralism is said to be one of the main preconditions to ensure political and cultural pluralism as well as strengthening citizen participation in democratic decision making. It is also said to be one of the most important prerequisites for freedom of expression (Meier and Trappel, 1998). One of the main consequences of high media concentration is the subsequent lack of public debate on media concentration. Even if journalists have their own concerns they do not report them, probably due to internal pressure, and it becomes more dangerous for journalist to investigate corruption the more corrupt the country is (Meier and Trappel, 1998; Freedom House). When explaining why corruption tends to lead to media concentration, the

emergence of *crony capitalism* is often seen as the main channel (McCormick, 1981). Crony capitalism can be defined as an economy in which business thrive due to a connection between the business and political class. By using state power to crush competition through special permits, government grants and other forms of state intervention, one or a few actors can develop monopoly or oligopoly within a specific market (Kristof, 2014). In the media market, crony capitalism therefore in the end results in media conglomerates with journalists rarely reporting of issues not in favor of their clients – a consequence is that investigative journalists move to public relations and write “press releases” instead (Lewis, 2014). A study by Bagdikian (1990) strengthens this theory. He found that market dominant corporations in the mass media exert a dominant influence over public news, public ideas and political attitudes and also effect the audiences’ perception of public life and politicians.

Brunetti and Weder (2003) examined the reversed causality, and they found that countries with a high level of press freedom tend to have a lower level of corruption. They suggest that an independent press is one of the most effective institutions in order to detect and uncover trespassing by government officials, since independent journalists have strong incentives to uncover misuse of power. The costs of corruption have also been of academic interest. The studies by Klitgaard (1987) and DeSoto (1988) put light on corruption as a major obstacle for developing countries, while Mauro (1995) found that corruption negatively affects rates of investment. Knack and Keefer (1995) show that corruption lower growth due to lower accumulation of resources in institutions as well as misallocation of resources, for example toward the media. It can be connected to a study by McChesney and Nichols (2010) where they found that political awareness is highly correlated with the amount of media subsidizes from governments.

Chowdhury (2004) found that the voters’ state of politic knowledge is robust correlated with the level of corruption within a country. He suggests that the best solution to this problem is a free press since it affects the voters’ state of knowledge and their subsequent selection of representative politicians. Strömberg (2015, 2) states that media scrutiny increases the political accountability which in turn improves policy. In an analysis of the evolution of mass media since World War II by Starr (2012) the consequences of the emergence of Internet was examined. The author states that the digital revolution has been good for freedom of expression and information but has mixed effects on press freedom since it disrupted the traditional sources of funding and weakened the ability of the press to act as an effective agent of public accountability.

In an American context, Snyder and Strömberg (2008) found that a poor fit between the diversity of media markets (in terms of newspapers) and political districts reduces the coverage of politics. In

other words, districts with a low diversity of newspapers tend to have a lower coverage of politics than the average on an aggregated level. They state that it is less likely that a congressman who is less covered by the media work for their constituencies, as well as standing witness before congressional hearings. They also found that it is less likely that inhabitants in these “poor fitted areas” know their candidates’ names. Kiouisis (2001) examined perceptions of news credibility for television, newspapers and online news from a randomly selected sample of residents in Austin, Texas. His data showed a moderate negative linkage between interpersonal discussion of news and media credibility for television but not for newspapers. His main finding was that people were generally skeptical of news coming from all three media channels.

In a study, also based on data from European Social Survey, Hakhverdian and Mayne (2012) examined the effect of education on institutional trust as a function of corruption. Although mass media often is seen as an institution in itself (McQuail, 2015), the definition of institutional trust is much broader and mass media only a confined part of it. However, they found that in countries with high levels of corruption education dampens institutional trust while it is boosted in countries with low levels of corruption. Another result from their study was that the least educated were unaffected by the level of corruption in their institutional trust. The relation between corruption and institutional trust has further been examined and this literature highlights that corruption undermines the institutional trust, mainly since it affects the procedural performance of the institutions and since corruption makes it difficult for governments to produce policies and services that responds to the general public (Rothstein and Uslaner, 2005).

Media can also be censored by the state when it considers the inner and outer political surroundings unsecure. During World War II, the coalition government in Sweden for example had regular contacts with all major Swedish newspaper which were obliged to report and get their material confirmed by the government in order to publish. Although the Swedish people were aware of the censure, they still generally had the perception of a free media since they believed it was for the common good (Ohlsson, 2016). Such examples show that although people know that the media to some extent is censored they can still have the perception that it is free.

2.2 Summary and Applying Theories

The main reason why corruption can be assumed to have a negative effect on press freedom is since it tends to lead to crony capitalism with subsequent media concentration, and thus a less diversified media landscape with a few actors in control. The studies suggesting that media concentration decreases democratic participation and the political state of knowledge of citizens could be an argument in favor of the hypodermic needle theory (that people are easy to deceive and brainwash), although more recent studies claim this theory to be incorrect. However, as recent studies on institutional trust suggest, it is likely that corruption has a negative effect on perceived press freedom since corruption makes it difficult to produce policies and services that responds to the general public. When it comes to the difference between press freedom and perceived press freedom and if corruption tends to make people believe the press is freer than it actually is, it is possible, although there is no direct effect, that the agenda, priming and framing aspects due to corruption have been around for so long time that the effect of corruption is negative (that is, if the hypodermic needle theory is not correct).

Data

In the following section I give a short motivation to each variable as well as an explanation to where the data is collected from. See Appendix A for a complete list of the included countries.

To study the relation between corruption and press freedom, perceived press freedom and the difference between press freedom and perceived press freedom, I use a cross-sectional data set. The research design invites to the usage of different dependent variables in order to detect changes in the explanatory power of the regressors. This means that I need to consider variables in the cross-sectional analysis that not only can be assumed to affect all dependent variables, but also explanatory variables that are assumed to only affect one of the dependent variables. Unemployment, for example, can be assumed to affect perceived press freedom due to a resulting dissatisfaction and subsequent suspiciousness toward institutions and henceforth media, while the effect of unemployment on press freedom is intuitively vaguer.

In the panel data regression, where I examine the causality of corruption on press freedom, the included variables are almost the same as in the cross-sectional regressions, but some variables had to be left out due to missing values.

3.1 Dependent Variables

This paper examines three different dependent variables; press freedom, perceived press freedom and the difference between press freedom and perceived press freedom.

Data for *press freedom* is collected from Freedom House's *Freedom of the Press Index*. Freedom House is an American non-governmental organization that conducts yearly researches on democracy, political freedom and human rights. They are considered an important contributor to the advocacy of these subjects and their data is widely used in academic researches within the field. The index consists of three components – legal environment, political environment and economic environment – where each component gives a ranking point in the related area of interest. In total the index sums up to a number between 0 and 100, where a low score indicates a free press and a high score

indicates a non-free press. To facilitate further interpretations I have inverted the scale in my data set, thus a high score indicates a high press freedom and vice versa. Initially my intention was to use the European based Reporters without Borders' *World Press Freedom Index*, but since this measurement has changed over the years it would have complicated the interpretation of the panel data results. Finally, although sometimes being referred to as "press freedom in reality" in this paper, one should be aware of that the Freedom House index is constructed on the assessment of the organization and it should not be regarded as a neutral truth. Also note that the freedom of the press index is based on country specific circumstances in the previous year and therefore applied in the regressions accordingly. For example, the freedom of the press index for 2017 is used for the 2016 cross-section in the panel data.

The *perceived press freedom* is an index I have calculated on my own, based on data from European Social Survey Round 6 in 2012. European Social Survey is an academically driven cross-national survey that every second year conducts face-to-face interviews with newly selected individuals, creating cross-sectional samples in every round. The survey focuses on measuring attitudes, beliefs and behavior patterns of diverse populations in more than thirty nations, although the countries included may differ between rounds (European Social Survey, 1). In accordance to similar studies based on data from European Social Survey (although these studies have focused on institutional trust) an index is calculated as the average of questions related to media perception (Hakhverdian and Mayne, 2012). In the questionnaire two questions regarding media perception were included, these questions were; "in [your] country the media are free to criticize the government" and "in [your] country the media provides citizens with reliable information to judge the government". The respondents were supposed to answer the questions by ranking their opinion from 0 to 10, where 0 means that the respondent does not apply to the statement at all and 10 that the respondent applies completely. The index used for perceived press freedom is the average of these two questions. First an individual average is calculated and then a national average based on the individual data. In case of a missing value the respondent was removed from the data set. The research was conducted in 29 European countries and the number of respondents in each country ranged from a minimum of 864 in Italy to a maximum of 2782 in Germany. The average number of respondents per country was 1694. Adjustments for regional and socioeconomics differences were incorporated in the original research by European Social Survey in order to reach an as country representative group as possible (European Social Survey, 1). However, since participation was voluntary, there is always a risk for selection bias. The perceived press freedom variable is transformed to a 0-100 scale in order to match the Freedom House' Freedom of the Press Index.

The third dependent variable, *the difference between press freedom and perceived press freedom*, is measured as the difference between the two variables described above. The difference variable, ranging from 0-100, is calculated accordingly:

$$\text{Difference} = \text{Freedom House Press Freedom Index} - \text{Perceived Press Freedom} \quad (3.1)$$

The aim with this variable is to examine how well the perception of press freedom corresponds to press freedom in reality. More specifically I want to examine whether higher corruption tends to “cloak the reality”, which in this case should be indicated by corruption having a negative effect on the difference between the real and perceived press freedom. This measurement may not be optimal since the two scales are hard to compare (it is hard to say what a specific number on the press freedom index scale corresponds to on the perceived press freedom scale) but it may give a hint in which direction the effect, if any, goes. After all both scales are ordinal.

3.2 Explanatory Variable

Corruption is believed to have a negative relation to press freedom and perceived press freedom although it has also been argued that it can mislead the perception of people toward institutions and likewise. Data is collected from Transparency International’s *Corruption Perception Index*, which is a global anti-corruption coalition that annually provides country specific data on corruption. Their definition of corruption is “the misuse of public power for private benefit” and the index is determined by expert assessments and opinion survey. The index ranks countries between 0 and 100, where a lower value indicates a higher level of corruption. Even in this case, in order to facilitate further interpretations, I have inverted the data in my data set, thus a lower value in the regressions indicates a low level of corruption and vice versa.

3.2.2 Instrument to the 2SLS Estimation

As instrumental variable for corruption I have chosen *ethnolinguistic fractionalization*. Ethnolinguistic fractionalization has been used as instrumental variable for corruption in previous studies (Mauro,

1996). I use the instrument since it is not unlikely that corruption suffers from endogeneity. According to the definition of an instrumental variable, ethnolinguistic fractionalization can be assumed to affect corruption without affecting the dependent variable except from its impact on corruption. Data is collected from Alesina et al's analysis on ethnic fractionalization from 2004 which measures the probability that two randomly drawn individuals in a specific country are from different ethnic groups. The variable is time invariant and will therefore not be used in the panel regression.

3.3 Control Variables

The following variables are included in all regressions (unless otherwise stated), both in the panel and cross-sectional, as control variables. They have either been used as control variables in previous studies and/or can be assumed to have an impact on one of the dependent variables.

The level of *education* is likely to be positively related to press freedom due to an increasing human capital and henceforth a developed awareness of institutions and political surroundings. It is also possible that it works in the other direction, that a higher press freedom leads to better institutions and economic development which in turn encourage education. Since education leads to an improved human capital it is also likely to be negatively related to the perceived press freedom the higher the level of corruption in a country is. Data for education is collected from United Nation's *Human Development Index*, which measures the average and expected years of schooling. The latest report was from the Human Development Report in 2014, and I will therefore use the education index of 2014 for the missing values in 2015 and 2016 in the panel regression.

As mentioned previously *unemployment* is included since it is likely to affect perceived press freedom negative due to a resulting dissatisfaction and subsequent suspiciousness toward institutions and henceforth media. It can also be an indication on how well the economy is going, which is an effect I also control in GDP per capita. Data for unemployment is collected from the World Bank.

GDP per capita is included since a higher standard of living often is likely to be followed by a higher level of general satisfaction as well as a more developed human capital. It is therefore assumed to affect both press freedom and perceived press freedom positive. Data for GDP per capita is collected from the World Bank and is PPP adjusted in 2010 prices.

The variable *suffrage* is a dummy variable that shows whether the specific country has conducted democratic election on permanent basis without interruptions since 1960 (0 if the country has, 1 if it

has not). Democratic election is defined as elections with universal suffrage. It is likely that the longer the history of a democratic system within a country is, the more diversified is the media.

3.3.2 Additional Control Variable for Perceived Press Freedom

Media concentration will only be included as a control variable in the regression with perceived press freedom as dependent variable. This is because the data is collected from the Freedom House's Freedom of the Press Index and therefore a part of the index itself and hence a part of the two other dependent variables as well. Of the three components assembling the Freedom of the Press Index, media concentration is interpreted as the same as the economic environment component. The variable measures the diversity of the media and the possibility for new media to establish. It ranks countries on a scale 0-30, where a higher score indicates a higher media concentration (worse economic environment). A high media concentration is likely to have a negative effect on the perceived press freedom.

3.4 Descriptive Statistics

Below are two box-plots depicting the yearly development and distribution of the Freedom of the Press Index and the Corruption Perception Index for the included countries in the panel regression. The figures show that both indexes have declined in recent years.

Figure 3.1 - Press Freedom Development

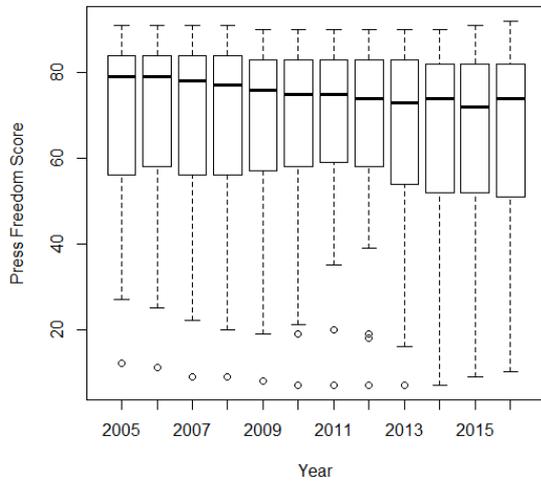
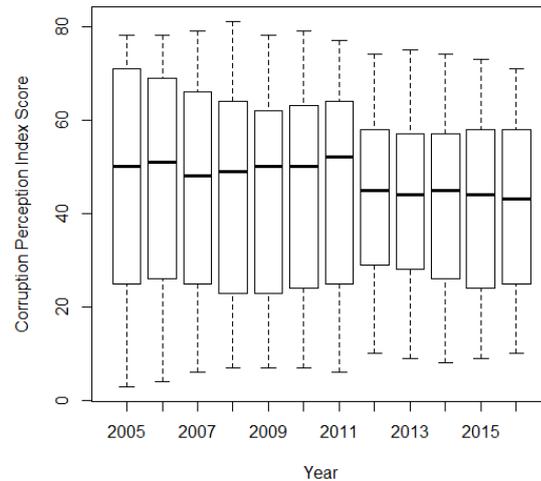


Figure 3.2 - Corruption Development



To see whether the theory, that a high media concentration is closely linked to corruption, can be applied to my data I run a correlation plot with a fitted line.

Figure 3.3 - Media Concentration and Corruption

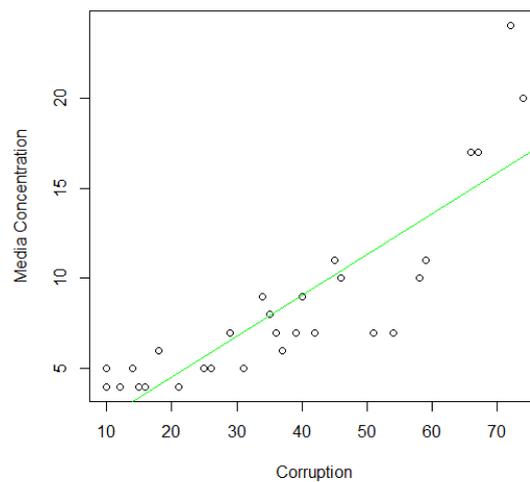


Figure 3.3 suggests that the theory can be applied to my data since there is a strong positive relationship (although the numbers of observations are relatively small). The correlation between media concentration and corruption is 0.8621. For a complete correlation matrix of all the included variables, see Appendix B.

Methodology

In total the data consists of two data sets, both with different properties and I will accordingly use different approaches for them. In the first set of regressions, based on cross sectional data, an instrumental variable approach is applied. The second regression, based on panel data, is estimated by a panel regression.

4.1 Cross Sectional Regression – an IV-Approach

When I examine the relation between corruption and press freedom, perceived press freedom and the difference between press freedom and perceived press freedom, a cross sectional data from European Social Survey Round 6 in 2012 is used as basis, which contains 29 observations. Since the data set is rather small and there is a risk for endogeneity in the corruption variable an IV-approach will be applied (if possible). In total three regressions will be conducted on the cross sectional data set, one for each one of the three dependent variables mentioned above. In each of the three regressions one ordinary OLS regression and one 2SLS regression will be run and then compared with a Hausman test for exogeneity, where the null hypothesis is that the explanatory variables are exogenous, hence a p-value above 5 percent indicates exogeneity in the covariates.

4.1.2 Instrumental Variable Approach

An instrumental variable approach, or a two stage least square (2SLS), can be applied to overcome problems with measurement errors and omitted variables and it is used when the correlation between one explanatory variable and the dependent variable can be assumed to not reasonably reflect the causal relationship between the two. It should be applied when the data is assumed to exhibit a covariance that not equals zero between one of the covariates and the error term, and when the error term conditional on the covariates is assumed to not equal zero as well (Dougherty, 2011).

When to use IV-estimate:

$$\text{Cov}(x_i, u_i) \neq 0 \text{ and } E\{u|X\} \neq 0 \quad (4.1)$$

$$\text{Dependent variable} = \alpha + \beta_1 * \text{Endogenous variable} + \sum_{i=2} \beta_i * \text{Control variables} + u \quad (4.2)$$

Where the endogenous variables is correlated with the error term u.

Essentially an IV-approach allows for consistent estimation and it semi replaces a defective explanatory variable with one that is not correlated with the error term. A defective variable is a covariate that is correlated with the error term and it is therefore referred to as an endogenous variable. A good instrument is a variable that induces changes in the endogenous variable without affecting the dependent variable except through its impact on the explanatory variable (Dougherty, 2011). In other words the covariance between the instrument (denoted z) and the endogenous variable cannot equal zero while the expected value of the instrument conditional on the error term must equal zero. These properties are referred to as the first stage and the exclusion restriction. The first stage can be tested while the exclusion restriction has to be assumed (Verbeek, 2012).

First stage:

$$\text{Cov}(z_i, x_i) \neq 0 \quad (4.3)$$

Exclusion restriction:

$$E\{z_i|u_i\} = 0 \quad (4.4)$$

An initial regression on the endogenous variable with the other covariates including the instrument has to be conducted to determine whether the first stage is significant. This OLS regression shows if the chosen instrument actually has a significant effect on the assumed endogenous variable.

Test the first stage by OLS:

$$\text{Endogenous variable} = S_0 + S_1 * \text{Instrumental variable} + \sum_{i=2} S_i * \text{Control variables} + \epsilon \quad (4.5)$$

If the instrument is significant the estimated parameters from regression 4.5 (denoted \hat{S}_i) is used to formulate predictions on the endogenous variable, which is then inserted into the second stage regression accordingly:

$$\widehat{\text{Endogenous variable}} = \hat{S}_0 + \hat{S}_1 * \text{Instrumental variable} + \sum_{i=2} \hat{S}_i * \text{Control variables} \quad (4.6)$$

Run second stage by OLS:

$$\text{Dependent variable} = \alpha + \beta_1 * \widehat{\text{Endogenous variable}} + \sum_{i=2} \beta_i * \text{Control variables} + u \quad (4.7)$$

Note that the second stage regression 4.7 is similar to equation 4.2, with the exception that the endogenous variable now is predicted by the instrument (Verbeek, 2012).

4.1.3 Apply Instrumental Variable Approach to My Data

First I need to check whether the instrument, ethnolinguistic fractionalization, is significant to the endogenous variable, corruption. To test for this I run a simple OLS regression on the first stage according to equation 4.5, with corruption as the dependent variable. Robust standard errors are used in all regressions.

Table 4.1 - Testing First Stage with Corruption as Dependent Variable

	Press Freedom and the Difference	Perceived Press Freedom
<i>Ethnolinguistic fractionalization</i>	4.204 (2.1446) <i>p</i> = 0.0634 .	3.147 (1.757) <i>p</i> = 0.0884 .
Intercept	292.9 (36.63) <i>p</i> = 0.000 ***	105.3 (47.40) <i>p</i> = 0.0381 *
Education	-0.2900 (0.4569) <i>p</i> = 0.5325	-0.0037 (3.755) <i>p</i> = 0.9888
Suffrage	12.07 (5.7086) <i>p</i> = 0.0467 *	10.98 (3.7452) <i>p</i> = 0.0083 **
Unemployment	-0.4300 (0.4638) <i>p</i> = 0.3645	-0.0520 (4.1755) <i>p</i> = 0.8760
ln GDP per capita	-21.03 (5.5952) <i>p</i> = 0.0012 **	-9.3847 (0.0360) <i>p</i> = 0.0360 *
Media Concentration	-	1.7005 (0.2830) <i>p</i> = 0.000 ***
		Properties
R-square	0.8372	0.9095
P-value	0.000 ***	0.000 ***

Note that media concentration is not included in the regressions on press freedom and in the regression on the difference between press freedom and perceived press freedom, since the variable is a part of the press freedom variable itself.

According to the results from the first stage regressions presented in table 4.1, ethnolinguistic fractionalization is significant as instrumental variable on a ten percent level in both regressions.

4.1.4 Summary of the Cross Sectional Data Approach

In total I run three regressions on three different dependent variables and examine the corruption variable. The three dependent variables are, as mentioned earlier, press freedom, perceived press freedom and the difference between press freedom and perceived press freedom. For each dependent variable one simple OLS regression and one 2SLS regression is run, with ethnolinguistic fractionalization as instrument for corruption. To determine which one of the OLS and 2SLS regression that best fits the data a Hausman test for exogeneity in the covariates is conducted.

An implication when comparing a 2SLS regression with an OLS regression and working with cross-sectional data is the risk for reversed causality in the OLS regression. While the 2SLS regression gives us the causal effect of corruption on the dependent variables, the OLS regression only provides the correlation estimate between corruption and the dependent variables, not in which direction the causality works.

4.2 Panel Data Regression

The second regression is based on panel data and it examines the *causality* of corruption on press freedom. Data is collected from 45 European countries between 2005 and 2016, a total of 540 observations. Initially all European countries as of 2017 were included but some had to be dropped due to missing values. Those countries were Andorra, Liechtenstein, Kosovo, Monaco, San Marino and the Vatican City. All those countries, except Kosovo which is the youngest country on the continent and therefore lacks data, are considered European microstates. Note that Israel is included, although not generally seen as a part of Europe, since it was part of the European Social Survey Round 6 and hence incorporated in the cross sectional analysis.

4.2.1 Modeling the Panel Regression

In the panel data regression Freedom House's press freedom index is the only dependent variable. To determine which one of the pooled, random effects and fixed effects models that best fits the data I need to compare them. The pooled estimation is just an ordinary OLS estimation. In the random effects model the individual specific components α_i in the error term are random, independently and identically distributed over all individuals. The error term can be described as $\alpha_i + u_{it}$. In the fixed effects model on the other hand, the individual α_i components in the error term are not random and thus correlated with the independent variables – the same interpretation is valid for the time specific α_t components in the error term. In other words, the fixed effects model captures all the unobservable time-invariant differences across individuals (Verbeek). First I compare the pooled model with the random effects model by conducting an LM-test, followed by the same procedure for the pooled model versus the fixed effects model. A low p-value in the LM-test suggests that the random and fixed effects models are preferred over the pooled model. Finally, to determine which

one of the random and fixed effects models to use, a Hausman test is conducted. A low p-value in the Hausman test suggests that the fixed effects model is preferred over the random effects model. See Appendix D for a more thorough overview of the panel regressions and the related tests. Note that the time invariant parameters, the intercept and the suffrage variable, disappear due to within estimation in the fixed effect regressions.

The results suggest that the fixed effects model is best fitted for my panel data. It is conducted accordingly:

$$Press\ Freedom_{it} = \alpha_{i,t} + \beta_0 + \beta_1 Corruption_{it} + \sum_{i=2} \beta_i Control\ Variables_{it} + u_{it} \quad (4.8)$$

Where $\alpha_{i,t}$ represents the individual and time fixed effects.

Results

In the following section the results from the regressions are presented. First out are the cross-sectional regressions where the dependent variable varies between press freedom, perceived press freedom and the difference between press freedom and perceived press freedom. It is followed by the panel data regression with only press freedom as dependent variable.

5.1 Cross Sectional Regression

The cross sectional analysis was conducted on 29 European countries based on data from 2012. Media concentration is only included in the regressions on perceived press freedom since it is a part of the measurement for press freedom and hence included in the dependent variable in the other two regressions.

5.1.2 Press Freedom

Table 5.1 – Cross-Sectional Regression with Press Freedom as Dependent Variable

	OLS	IV-estimate
Corruption	-0.9947 (0.3810) p = 0.0217 *	-0.4871 (0.7202) p = 0.5062
Intercept	89.20 (138.6) p = 0.5267	-45.52 (234.5) p = 0.8479
Education	0.3712 (0.4041) p = 0.3687	0.4138 (0.4485) p = 0.4669
Suffrage	8.510 (3.941) p = 0.0425 *	2.298 (10.43) p = 0.8278
Unemployment	0.3720 (0.4221) p = 0.3881	0.5737 (0.6782) p = 0.4071
GDP per capita (ln)	-1.7952 (14.52) p = 0.9028	9.448 (21.77) p = 0.6688
		Properties
R-square	0.7915	0.7439
P-value	0.000 ***	0.000 ***
Hausman test (exogeneity)		0.8238

In relation to press freedom the corruption variable has a significant negative effect in the OLS regression, although the IV-estimate is insignificant. The Hausman test for exogeneity suggests the data is exogenous and that the OLS regression is preferred. The interpretation is that a higher level of corruption is negatively related to press freedom. Among the control variables, suffrage is significantly positive related to press freedom, which is surprising since it implies that the dummy for countries with universal suffrage after 1960 relates positively to press freedom.

5.1.3 Perceived Press Freedom

Table 5.2 – Cross-Sectional Regression with Perceived Press Freedom as Dependent Variable

	OLS	IV-estimate
Corruption	-0.1286 (0.1217) P = 0.3034	-0.2723 (0.5513) P = 0.6268
Intercept	108.7 (36.01) P = 0.0068 **	126.2 (65.67) P = 0.0690 .
Education	-0.2387 (0.2879) P = 0.4169	-0.2166 (0.3200) P = 0.5063
Suffrage	-3.9475 (3.0451) P = 0.2096	-2.216 (7.7019) P = 0.7765
Unemployment	-0.2802 (0.1976) P = 0.1707	-0.2872 (0.2082) P = 0.1831
GDP per capita (ln)	-0.5248 (2.4604) P = 0.8333	-2.179 (6.1579) P = 0.7272
Media Concentration	-1.0028 (0.2566) P = 0.0009 ***	-0.7481 (0.9944) P = 0.4606
		Properties
R-square	0.8218	0.8129
P-value	0.000 ***	0.000 ***
Hausman test (exogeneity)		0.9536

When it comes to perceived press freedom the corruption variable is negatively related in both regressions, although not significant. However, in the OLS regression, media concentration is negatively related to perceived press freedom on a three star level of significance. The Hausman test for exogeneity suggests that the data is exogenous and that the OLS regression is preferred. The interpretation is that a higher level of media concentration tends to relate negatively to perceived press freedom. If I remove the media concentration variable it turns out that the corruption variable becomes significantly negative related to perceived press freedom instead (see Appendix C). This is an interesting finding since it indicates that the effect of corruption on perceived press freedom (due to the high correlation between corruption and media concentration) is mainly channeled through media concentration.

5.1.4 The Difference Between Press Freedom and Perceived Press Freedom

Table 5.3 – Cross-Sectional Regression with the Difference as Dependent Variable

	OLS	IV-estimate
Corruption	-0.5645 (0.2601) P = 0.0416 *	-0.1042 (0.9083) P = 0.9097
Intercept	4.031 (94.48) P = 0.9664	-131.5 (274.2) P = 0.6365
Education	0.4936 (0.3330) P = 0.1531	0.5365 (0.4824) P = 0.2786
Suffrage	9.909 (4.100) 0.0248	3.660 (13.88) P = 0.7946
Unemployment	0.5392 (0.3322) P = 0.1194	0.7422 (0.6368) P = 0.2569
GDP per capita (ln)	-2.4796 (9.867)	-0.1043 (0.9083) P = 0.9097
		Properties
R-square	0.5819	0.4628
P-value	0.0016 **	0.0281
Hausman test (exogeneity)		0.7941

In the last group of the cross-sectional regressions, with the difference between press freedom and perceived press freedom as dependent variable, the corruption variable is significantly negative related to the dependent variable in the OLS regressions, while the relation is not significant in the IV-regression. The Hausman test for exogeneity suggests that the OLS regression is the more trustworthy of the two. The interpretation is that a higher level of corruption tends to make people believe the press freedom is freer than in actually is, since corruption has a significant negative effect on the difference.

5.2 Panel Data Regression

The panel regression analysis is conducted on 45 European countries between 2005 and 2016, which sum up to a total of 540 observations. In Appendix D, the results from the pooled and random regressions are included as well. On this data, LM- and Hausman-tests were conducted in order to determine which of the models to use. The tests suggested that the fixed effect model was the best estimation method and that is why I have chosen to only present this regression below. All regressions are adjusted with robust standard errors.

Corruption	-0.0227 (0.0384)
	p = 0.5542
Intercept	-
Education	-0.2901 (0.1116)
	p = 0.0096**
Suffrage	-
Unemployment	-0.0626 (0.0739)
	p = 0.3973
GDP per capita (ln)	5.242 (2.760)
	p = 0.0581 .
Properties	
R-square	0.0407
P-value	0.0005***
Multicollinearity	Yes

As with the cross-sectional regressions, the panel regression is significant on a three star level. The intercept and the suffrage variable disappear due to that the fixed effect is based on within estimation and henceforth variables with time-invariant and constant properties equal zero. The within estimation is also the reason why the R-square value might seem to be suspiciously low, since it removes both the individual and time effect. Corruption has a negative causality in the regression, although not significant. It means that a higher corruption cannot be said to significantly lead to a lower press freedom. Regarding the control variables, a higher education has, surprisingly, a

significant negative effect on press freedom. The table also shows that GDP per capita has a positive effect on press freedom on a ten percent level of significance.

Conclusion

The results strengthen the theory that corruption is negatively related to both press freedom and perceived press freedom. The high correlation between corruption and media concentration also makes it clear that the linkage to media concentration is one of the main channels from which corruption affects press freedom. The negative effect of media concentration (and corruption) on perceived press freedom is in accordance with previous researches on institutional trust, that a higher corruption is reflected by public disbelief toward institutions such as the mass media. It also works as critique to the hypodermic needle theory – people in general are aware of media biasedness (if present) and they are not easily deceived. However, as the results from the regression on the difference between press freedom and perceived press freedom suggests, corruption can be interpreted to make people believe the press is freer than it actually is. This is an interesting finding and if the available data on perceived press freedom should extend in the future I recommend further research on this subject.

In terms of causality, the result from the panel regression suggests that the effect of corruption on press freedom is negative but not significant. This finding was somewhat surprising, but it might be due to that it takes time for media concentration to occur and that the effect of corruption can be seen first after some years. This is also a subject I recommend further research on.

Finally, to answer the question addressed in the introduction, whether a majority of the people in Russia and Turkey are aware of the mass media biasedness but support the governments anyway or if they believe the mass media is critical and reliable and thereby support the government, the answer, based on the discussion and findings in this paper, is probably the first statement of the two. It is likely that people are aware of the biasedness, as the perceived press freedom for Russia also suggests (there is no such data for Turkey), but due to the fact that both countries have suffered from corruption for a long time it is also likely that the agenda, priming and framing aspects over the years have shaped a public cognitive mind in favor of the governments.

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Appendix

A

Included Countries

Cross-Sectional Data	Panel Data	
Albania	Albania	Montenegro
Belgium	Armenia	Netherlands
Bulgaria	Austria	Norway
Cyprus	Azerbaijan	Poland
Czech Republic	Belarus	Portugal
Denmark	Belgium	Romania
Estonia	Bosnia & Hercegovina	Russia
Finland	Bulgaria	Serbia
France	Croatia	Slovakia
Germany	Cyprus	Slovenia
Hungary	Czech Republic	Spain
Italy	Denmark	Sweden
Ireland	Estonia	Switzerland
Israel	Finland	Turkey
Iceland	France	Ukraine
Kosovo	Georgia	United Kingdom
Lithuania	Germany	
Netherlands	Greece	
Norway	Hungary	
Poland	Iceland	
Portugal	Ireland	
Russia	Israel	
Sweden	Italy	
Slovenia	Latvia	
Slovakia	Lithuania	
Spain	Luxembourg	
Switzerland	Macedonia	
United Kingdom	Malta	
Ukraine	Moldova	

B

Correlation Matrices

Correlation Matrix – Cross-Sectional Regressions							
	Corr.	Unem.	Educ.	Suff.	M.C	InE	InGDP
Corruption	-	0.3980	-0.6083	0.7291	0.8621	0.3979	-0.8410
Unemployment	0.3980	-	-0.5979	0.4649	0.2755	0.0518	-0.5284
Education	-0.6083	-0.5979	-	-0.4478	-0.6140	-0.0563	0.7311
Suffrage	0.7291	0.4649	-0.4478	-	0.5628	0.3923	-0.7367
Media	0.8621	0.2755	-0.6140	0.5628	-	0.3206	-0.7802
Concentration							
In Ethno	0.3979	0.0518	-0.0563	0.3923	0.3206	-	-0.3270
In GDP capita	-0.8410	-0.5284	0.7311	-0.7367	-0.7802	-0.3270	-

Correlation Matrix – Panel Data Regression					
	Corruption	Unemployment	Education	Suffrage	In GDP capita
Corruption	-	0.3838	-0.6131	0.6423	0.8240
Unemployment	0.3838	-	-0.4423	0.3045	0.4423
Education	-0.6131	-0.4423	-	-0.3440	0.6438
Suffrage	0.6423	0.3045	-0.3440	-	-0.6447
In GDP capita	0.8240	-0.4423	0.6438	-0.6447	-

C

Cross-Sectional Regression on Perceived Press Freedom (No Media Concentration)

Table Appendix C – Cross-Sectional Regression with Perceived Press Freedom as Dependent Variable (No Media Concentration)

	OLS		IV-estimate
Corruption	-0.3802 (0.1617) p = 0.0285 *		-0.3828 (0.3611) p = 0.3010
Intercept	85.16 (59.58) p = 0.1676		85.97 (102.4) p = 0.4105
Education	-0.1225 (0.3175) p = 0.7036		-0.1227 (0.3139) p = 0.6996
Suffrage	-1.399 (3.1831) p = 0.6650		-1.3660 (6.0122) p = 0.8230
Unemployment	-0.1672 (0.2400) p = 0.4936		-0.1684 (0.2595) p = 0.5233
GDP per capita (ln)	0.6844 (5.552) p = 0.9031		0.6176 (9.184) p = 0.9470
Media Concentration	-		
		Properties	
R-square	0.791		0.7809
P-value	0.000 ***		0.000 ***
Hausman test (exogeneity)		0.9536	

D

Panel Regression

Table Appendix D – Panel Regression			
	<i>Pooled</i>	<i>Fixed</i>	<i>Random</i>
Corruption	-0.6531 (0.041) p=0.000***	-0.0227 (0.0384) p = 0.5542	-0.0766 (0.0411) p = 0.0630 .
Intercept	2.0968 (15.64) p=0.8934	-	102.4 (22.23) p=0.000***
Education	0.3028 (0.0858) p=0.000***	-0.2901 (0.1116) p=0.0096**	-0.4142 (0.1042) p=0.000***
Suffrage	0.5648 (1.311) p = 0.6667	-	-20.42 (3.667) p=0.000***
Unemployment	0.6332 (0.0851) p=0.000***	-0.0626 (0.0739) p=0.3973	-0.1382 (0.0715) p=0.0539
GDP per capita (ln)	6.3393 (1.432) p=0.000***	5.242 (2.760) p = 0.0581 .	1.179 (2.275) p=0.6047
Properties			
R-square	0.7191	0.0407	0.1273
P-value	0.000***	0.0005***	0.000***
LM test pooled vs random	0.000***	-	0.000***
LM test pooled vs fixed	0.000***	0.0000***	-
Hausman test fixed vs random	-	0.0165*	0.0165*