



DEPARTMENT OF POLITICAL SCIENCE

WHAT QUALITIES OF PUBLIC ORGANIZATIONS MATTER MOST FOR GENERALIZED TRUST? – AN EMPIRICAL ANALYSIS

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Abstract

This study identifies a research gap in the literature surrounding the quality of public organizations and generalized trust. It finds that the existing literature focuses heavily on the importance of corruption in this context. Other, non-corruption, aspects of quality of public organizations are found to be empirically understudied despite there being an established theoretical connection between these and generalized trust. This paper uses ordinary least squares regression to compare the impact of corruption, impartiality and a broad measure of bureaucratic quality on generalized trust cross-nationally. The findings provide support for the propositions on the link between corruption and trust and between broad bureaucratic quality and trust, but do not lend support for the argument that impartiality is related to generalized trust. The research deepens the knowledge of how public institutions relate to generalized trust and identifies new areas to be researched.

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1. Introduction

Trust is an important and well-researched concept in the social sciences, but it is not entirely self-explanatory (Bauer & Freitag, 2018; Serritzlew, Sønderskov *et al.*, 2014). The importance of social trust is owed to its links to various desirable social phenomena and outcomes, such as health, happiness, collective action, as well as human and economic development in societies (Charron & Rothstein, 2015; Mularska-Kucharek & Brzezinski, 2016; Uslaner, 2018; Özcan & Bjørnskov, 2011). At the individual level it is also associated with civic engagement and life satisfaction (*ibid*). Articles devoted to the link between public organizations and generalized public trust typically conflate impartiality and freedom from corruption when looking at the effect on trust (for instance Charron & Rothstein, 2015).

Despite trust being a well-researched concept, when it comes to the formation or generation of generalized social trust there are typically two schools of thought on the issue - an institutional (top-down) and a civic (bottom-up) understanding. This paper examines social trust in accordance with the top-down approach which has been spearheaded by, among others, Bo Rothstein (2005). The bottom-up approach, typically associated with researchers such as Robert Putnam (1995), is therefore not a central part of this paper. In brief, the top-down understanding of generalized social trust suggests that political institutions have a greater bearing on the formation of social trust (see for instance Delhey & Newton, 2004; Charron & Rothstein, 2015; Richey, 2010; Rothstein & Uslaner, 2005; Rothstein & Eek, 2009; Serritzlew, Sønderskov *et al.*, 2014; You, 2012). Empirical research provides, together, more consistent and robust results in support for the top-down perspective, as compared to those validating the civic approach.

In the literature representing the institutional approach, authors tend to focus on the issue of corruption and use this as a measure for institutional quality or the quality of public organizations in general. However, that is not necessarily sufficient, as public organizations have other qualities that may be at play – some authors do combine measures of corruption with a measure for impartiality, for instance. Despite the compelling findings in the literature, there has been little discussion on the relative importance of non-corruption qualities of quality of public organizations for trust. This paper sets out to discover if, and to what degree, the levels of generalized social trust can be explained by the quality of the public organizations cross-nationally when corruption is removed from the equation. In other words, does the quality of public organizations still have a relationship with generalized social trust if we only consider

non-corruption measures. Specifically, the goal of the paper is to answer the following research question:

“To what extent do non-corruption aspects of quality of public organizations affect the level of generalized social trust at the country-level?”

To answer this question, a review of the extant literature on the topic is first provided, so as to present the relevant research findings. Subsequently, a statistical analysis using ordinary least-squares regression (OLS) is employed, where, *inter alia*, the quality of public organizations is used to predict the level of generalized social trust cross-nationally. Specifically, it compares the effects of corruption, impartiality, and a broad measure of bureaucratic quality on the most common measure of trust.

Before proceeding with the actual analysis, a literature review is be given, wherein findings and limitations of existing research are discussed. Next, an in-depth description of the methodological approach of this thesis is provided, as well as a discussion and description of the selected variables/measures used in the analysis. Subsequently, the results of the statistical tests are discussed, and finally a conclusion is provided on what lessons have been learned over the course of this analysis, and what the broader implications of the findings are.

2. Literature review and theoretical discussion

This section presents and discusses the connections between the most important concepts found in the paper, namely generalized trust and quality of public organizations. Along with a discussion of the concepts and the extant literature surrounding them, the hypotheses which can be drawn from the literature are also presented. The aim is to make clear what the state-of-the-art pertaining to generalized social trust currently looks like, and to identify what is lacking in the current academic understanding of it.

2.1. Conceptualization of generalized social trust

Trust can take many forms and can have different meanings when applied to different contexts (Bauer & Freitag, 2018). Rousseau [1998] defined trust as a “*psychological state comprising the intention to accept vulnerability based on the expectations of the intentions or behavior of another*” (Lewicki, 2012). In this thesis, the focus is only on one dimension of trust, namely generalized social trust. It is important to precisely conceptualize generalized social trust, and not to conflate it with any other dimension of trust, such as particularized trust, or political trust. Unlike the latter two, which describe a trust towards specific individuals, or towards political institutions, generalized social trust describes a sense of trust in people at large, including those who are unlike oneself. It can even be considered to be a reflection of the society’s moral standing, as it is in essence a reflection of whether an individual person views their society to be good or bad (Uslaner, 2018). Paraphrasing Mark E. Warren (2018), trust can also be taken to be a judgment of another person’s willingness and ability to act in one’s interest.

Such cooperative norms can be difficult to measure, however, and there is no clear-cut, universally accepted way of doing so (Giljam, Dahlberg & Lundmark; 2015). Measuring trust is commonly done either in experimental settings, using games which should elicit a response in the subject where they either do or do not exhibit a behavior linked with trust, or through self-assessment among survey respondents (Bauer & Freitag, 2018). An example of such a game is the “classic trust game” where an individual *A* is given a sum of money and is presented with the choice of either keeping the money or sending it to individual *B*, at which point the sum is multiplied by a certain amount (ibid). Individual *B* then has the choice to send an amount of money back. This scenario is designed to exhibit the trust that *A* has in *B*, and also the trustworthiness of *B*.

Probably the most common measure for generalized social trust can be traced back to an instrument devised in 1956, where respondents were asked whether they believe most people can be trusted or that you can't be too careful in dealing with people (Bauer & Freitag, 2018; Gilljam, Dahlberg & Lundmark, 2015). Examples of surveys using this wording are the World Values Survey (WVS) and the European Values Survey. Although previously this was a dichotomous measure, a more common understanding found in the literature today is that trust likely exists on a continuum, and thus may be more accurately measured through an 11-point Likert scale (Gilljam, Dahlberg & Lundmark, 2015). This form of a scale has been found to be just as valid as the dichotomous measure but allows for more nuances in the answers (ibid). Simpler wording in the measure is also preferable, as it reduces the cognitive requirements for the respondent to answer the question, while simultaneously not detracting from the validity (ibid). Despite its widespread use, Nannestad (2008) criticizes this measure of generalized social trust and argues that it might not be entirely valid as it is underspecified and relies on the respondent(s) to fill in their own ideas of the scope of "most people", arguing that this is clearly different depending on what group the respondent is from. That argument is supported by a paper by Delhey and Welzel (2011) where it was shown that the radius of "most people" varied between countries, and that, for example, Confucian countries had a narrower radius, while wealthier countries had a wider radius. Despite this, Nannestad (2008) notes that there is a good level of stability and reliability in this measure at the aggregate level, and that the levels of trust in countries using this measure are correlated with the levels of other related phenomena, such as the number of returned wallets. For country-level analysis, though, it is still common practice to look at the proportion of trusting people, as opposed to the average level of trust in society.

2.2. Institutional qualities and generalized trust

The notion that social trust is related to the quality of public institutions is one that has been discussed greatly. The top-down approach has aimed to examine whether and to what degree positive properties of institutions, such as impartiality, transparency, stability, and freedom from corruption in the public sector bureaucracy have a role in the generation or formation of generalized social trust. There are many authors who have shown results indicating that this might be the case (see for instance Delhey & Newton, 2004; Charron & Rothstein, 2015; Richey, 2010; Rothstein & Uslander, 2005; Serritzlew, 2014).

Public power can be abused in a multitude of ways, and one of the most common approaches to understanding the quality of public organizations is to focus on the abuse of office for private gain – corruption. Those who hold power ultimately have incentives to abuse it, and to maximize their own gain (Miller, 2000). Out of the multitude of forms that the misuse of public power may take, the two that have been given the most attention with relation to trust are corruption and partiality. Despite their conceptual proximity, where both concern some form of misuse of public power, a distinction can be drawn between partiality and corruption. Rothstein & Teorell define impartiality as being “When implementing laws and policies, government officials shall not take into consideration anything about the citizen/case that is not beforehand stipulated in the policy or law” (p 170, 2008). Take, for example, a situation where a bureaucrat declines to issue a license to a business on the basis that it operated by a member of a certain social group that is different to her own. In that situation, the misuse would be labeled as partiality, as they are basing their decision on a characteristic that is morally irrelevant to the situation and that has not been included in the law surrounding the license. The motivation there is not necessarily one of self-gain or self-enrichment, but rather to deprive the member of that social group of certain rights or privileges. Corruption, on the other hand, is typically seen to involve the abuse of public power primarily for the purpose of private gain and “occurs where private wealth and public power overlap” (Chang & Chu, 2006; Rose-Ackerman, 2008). Hence, these concepts are closely linked, yet conceptually distinct, and as such can be expected to bring about similar outcomes.

The effect that corruption may have on social trust is demonstrated in a paper by Rothstein & Eek (2009), where it was shown that individuals have the propensity to extrapolate their experiences when they become aware of interactions with public officials where bribery was involved. They describe how subjective perceptions of the levels of corruption were correlated with generalized social trust. While there is little disagreement pertaining to this relationship existing, the directionality of it remains uncertain (Robbins, 2011). The article described an experimental setting where the subjects were given descriptions of different hypothetical interactions between a private person and a public official, and where bribes would sometimes be offered or solicited. It showed that when subjects heard about interactions involving bribes, they were less likely to trust people in general from the society where the hypothetical interactions took place. It is argued that this means that when people encounter or hear about incidences of corruption, they extrapolate these experiences to the general public, and they are more likely to believe that others will exhibit or engage in similarly malfeasant behavior

(Rothstein & Eek, 2009). Furthermore, if public officials are prone to soliciting bribes in exchange for performing their duties, then a natural consequence is that individuals will be more likely to pay bribes, thus strengthening the inference that people are likely to engage in malfeasant behavior (ibid).

Another argument for this relationship was put forward by Knack & Zak (2003), who found that when the state is able to enforce contracts they contribute to the build-up of trust, as it means that cooperation between private individuals is made easier. If contracts are properly enforced, then cooperation involves less risk, which also builds up the information framework and, in turn, decreases the necessity for formal contract enforcement (ibid). Though their focus on contract enforcement does not entirely overlap with purpose of this paper, the idea is in line with the argument put forward by Rothstein & Eek (2009) who also suggest that trust can be considered an informal institution that allows for a degree of certainty when cooperating with others, reducing the need for having formal contracts in place.

Beyond the experimental evidence lies a large body of micro- and macro-level evidence indicating that corruption has a significant negative effect on the level of generalized social trust in societies. This relationship appears to persist not only cross-nationally, but also at the regional or the state level (Charron & Rothstein, 2015; Richey, 2010). Evidence for this can be found in a working paper by Charron & Rothstein (2015), where an analysis was performed at the individual-level and that studied the effect that quality of public organizations has on social trust in regions around Europe. The dependent variable used was a survey question using the wording of the WVS question on generalized trust. The primary independent variable was an index consisting of the perceived levels of quality, corruption, and impartiality in the regional public services. The public services that were studied were sub-national actors such as education, healthcare services and law enforcement. It was found that, though there is great variation in the levels of social trust at the regional level in Europe, there is a clear statistical relationship between trust and the quality of institutions in those regions. A similar relationship was also found in a cross-level analysis, showing that the regional institutional quality level had an impact on the trust levels of individuals. In other words, individuals with identical demographic characteristics were more likely to be trusting of others if they resided in regions characterized by high quality public services (ibid).

In his paper, Richey (2010) takes a slightly different approach by looking at the number of convictions from public corruption investigations involving federal, state, or local officials in each state in the United States. He finds that where the number of convictions is higher, the levels of social trust tend to be lower. This reinforces the notion that when people are aware of misdeeds by public officials, they tend to become less trusting towards others in general. However, his paper only touches upon one dimension of quality of public organizations, namely corruption, and the scope of the paper is further restricted as it only looks at conviction rates. Corruption is a nebulous concept in social sciences, because it often goes unreported, and there should therefore be a concern for measurement error in this instance, as there may well have been instances where corruption took place but that went unreported or did not lead to a conviction.

The question of the causality from institutions to generalized trust was explored by Robbins (2011). He made the case that the causality can be inferred from either side, and that the use of OLS-studies makes things difficult due to the threat of reverse-causation or merely finding spurious relationships. The issue was explored using a non-recursive structural equation model, which showed that, although there is reciprocity, the push from institutions to trust appears to be stronger than the inverse. Data for trust was sourced from the World Values Survey. Institutional quality was represented by three measures – protection of property rights, rule of law, and corruption. The measure for rule of law pertained to the degree to which civil liberties are protected, and to the effective sanctioning of abuses of power.

The theoretical framework for public organizations having an impact on the levels of generalized social trust is further corroborated in an article by You (2012). There, the argument is that fairness in the public administration is a determinant of social trust, and the measure used for that is the control of corruption in countries. The findings show a statistically significant relationship between the two. This article is yet another that does not investigate other qualities of public organizations – rather it focuses solely on corruption, which is a more explicitly illegal phenomenon. Impartiality, on the other hand, is overlooked, despite that it also has a theoretically strong bearing on the degree of fairness in the public administration. Given the findings in the literature discussed above, the first hypothesis of the paper can be found:

H₁: A higher level of corruption in public organizations will be correlated with a lower level of generalized social trust.

Harkening back to the discussion of impartiality and its definition, it is conceivable that an effect similar to that of corruption may take place in situations where public officials do not carry out their duties impartially. If an interaction were to involve some form of partiality, for instance, where a public official who knowingly abused their power and ignored standard procedures to direct resources to an acquaintance of theirs, it should elicit similar reaction to any observers. As both corruption and partiality constitute similarly malfeasant and dishonest behavior, it follows that the individual witnessing partiality in the public services would experience a decrease in their trust in people at large, as the public official disregarded their position as a role model in society. Thus, though impartiality and freedom from corruption are not entirely the same conceptually, it can be expected that they will have similar effects on social trust.

Teorell (2009) suggests, in line with the discussion above, that impartiality is a crucial element of quality of government, and that it is linked *inter alia* to interpersonal trust. The argument put forward was, indeed, that impartiality would exert an influence on social trust through a similar causal mechanism as corruption, but also that there would be an indirect effect on generalized trust going through institutional trust. This hypothesis was tested statistically using the standard trust measure from the World Values Survey (covering the years 1995-2004), and an index measure for impartiality composed of five questions from the Quality of Government expert survey. The results gave some indication that the two are correlated, however, the statistical significance of this relationship was not sufficient to properly support the theory once any control variables were added.

Bearing in mind all the findings above, we are led to the second hypothesis of the paper:

H₂: A higher level of impartiality within public organizations will be correlated with a higher level of generalized social trust.

Additionally, a third, more general, hypothesis can be proposed:

H₃: A higher level of (positive) non-corruption aspects of quality of public organizations will be correlated with a higher level of generalized social trust.

The existing literature shows that there is a relationship between generalized trust and institutions. Following the discussion on the conceptual proximity between partiality and corruption in public organizations and given the use of both concepts in the literature discussed

above, they both appear to be important determinants of social trust. The literature does not, however, establish which dimension of institutional quality has the greatest bearing on social trust. With the exception of the article by Teorell (2009), none of the articles discussed in this section attempted to investigate the effects of impartiality, or any other non-corruption aspects of quality of government on their own. Instead, the typical approach appears to be to combine measures for impartiality and corruption to gain an overall idea of the bureaucratic/institutional quality. As discussed previously, these two concepts are similar but conceptually distinct. Combining the two concepts provides no space for that distinction and renders the relative importance of impartiality a surprisingly understudied subject in this context. This constitutes a gap in the literature pertaining to the effects of institutions on generalized social trust. In its current state, it is problematic that the relative importance of these dimensions is not clear.

This gap is addressed by testing the aforementioned hypotheses with the goal to determine whether both corruption and non-corruption aspects are significantly related to generalized trust, and hopefully to determine which has the greatest bearing on it. The question of causality, though, is not investigated, as a theoretical and experimental foundation for this has already been provided in the discussion above. A contribution is made to the literature nonetheless, as this research it does not tangle up the effect of corruption with the effect of other non-corruption dimensions of quality of public organizations. Instead, it provides a separate analysis for the two, allowing for a comparison of their effects. The focus of this paper is on the quality of public organizations, *i.e.* the public bureaucracy.

Disentangling the effects of corruption and non-corruption dimensions of the quality of public organizations is an important endeavor, as it may inform both scholars and policymakers more precisely about what policies are worth pursuing in different contexts. Not all policies are possible in all contexts and at all stages of development and knowing what has the strongest relationship with social trust is crucial for those who aim to increase it. Additionally, the results of this paper may call into question the validity or usefulness of combining measures of corruption and impartiality as a composite measure of quality of government. If it is the case that impartiality is not at all related to social trust, then it may suggest that it is not useful to have them together, as one might get more accurate results by just looking at corruption. Furthermore, if impartiality is highly correlated with social trust (more so than corruption) then it may also be useful to investigate its relationship with social trust on its own.

3. Methodological approach

3.1. Methodology

This paper employs a quantitative approach to evaluate the relationship between the two outlined dimensions of quality of public organizations and generalized social trust and to compare the relative strengths of them. Ordinary least-squares regression models were developed using data taken from the state level of analysis. Identical models, using the same control variables are used, where the only differences are the independent variables – corruption, impartiality, and bureaucratic quality. This is a suitable approach, given that the goal is first to evaluate whether a relationship exists between the independent and dependent variables, and secondly to compare the strengths of the relationships. A particular advantage of OLS is that it allows for controlling for other factors that may have an effect on the dependent variable, meaning that other potential explanations can also be explored while looking at the effect of our main independent variable, quality of public organizations. This is an asset as it can provide more validity to the findings, as relationships that exist in a bivariate test may disappear once another variable is accounted for.

Aside from the quality of public organizations, there are other variables which have been put forward as determinants for social trust. A selection of these are used as controls for the statistical analysis in this paper, and a discussion of each is provided in the following section. The regression tables provide the coefficients for each of the variables, along with their standard errors and the probability for them. In this paper, a P-value of $p < 0.05$ is used, as it is the most common threshold for statistical significance (Gerring & Christenson, 2017).

To determine which of the independent variables has the strongest relationship with social trust, one can look at the coefficients. What those tell you is how much of a change can be expected in the dependent variable, social trust, for a one-unit change in the independent variables, either bureaucratic quality or corruption. For a relative understanding of the relationships, the standardized coefficients are presented in table 9 in the appendix. These coefficients show what impact a change in the independent variable may have on the dependent variable in terms of standard deviations. This is useful, as it simplifies comparisons between the independent variables.

This paper analyzes the relationship between quality of public organizations and generalized trust cross-nationally, which makes countries the unit of analysis. The data used for the variables cover only a sample of all the countries in the world. As per usual when incorporating measures from different sources, the coverage does not always remain the same, leading to a smaller N in some models. The precise number of observations for each model is provided in the regression tables. A list of countries contained in the dataset is provided in table 11 in the appendix.

The data itself is sourced from various databases and data sets, though all have been chosen due to their pervasive use in existing literature, or as a result of the reputation of the institution that gathered it. The Quality of Government (QoG) standard dataset (Teorell *et al.*, 2019), for instance, is a well-used dataset for a multitude of topics, and the measures contained within can therefore be expected to hold a high standard. World Bank data, similarly, can be trusted for it, too, is used widely in research, and also by policy-making bodies.

To conduct the regression analysis, Stata version 15.1 was used. The assumptions for linear regression are discussed for each of the main independent variables in the appendix (chapter 6).

3.2. Data sources and operationalization of concepts

3.2.1. Generalized social trust

As the dependent variable in this study, generalized social trust is operationalized through self-assessment survey data which were originally from the individual level, and then aggregated to the country-level. The data was sourced from the QoG standard dataset for 2016 (Teorell *et al.*, 2016), but the measure was gathered as part of World Values Survey during the period 2009-2014. The measure is constructed based on a question given to individuals where they could assess the degree to which they believe either “most people can be trusted” or “you can’t be too careful in dealing with people” and the responses ran along a 7-point Likert scale. Trust levels at the country were found by looking at the proportion of individuals who believed that most people could be trusted, without considering differences between weak and strong agreement to the statement. That means that a higher value indicates a higher percentage of people who agree at least partially with the statement “most people can be trusted”.

This measure of social trust is closely linked to the conceptualization of generalized social trust provided in the theory and literature review section. If a person were to judge that other people,

in general, cannot be trusted, then the expectation would not be that the person would be willing to accept vulnerability vis-à-vis a person whom they do not know. Similarly, if they have the idea that people, in general, can be trusted, then it should mean that they judge others to be likely to act in their interest, thus decreasing the necessity to be careful when dealing with other people. After all, if someone can be trusted, then one can justifiably presume that they would act in one's interest.

The data itself can be taken to be of a high quality, given its pervasive use in academia. Furthermore, though there has been debate about whether it is an ideal measure of social trust, there has been little change to the wording and the methodology of the decades that it has been in use. Therefore, it can be understood that it remains a valid measure to this day and using it for this paper allows for some continuity and direct comparisons to existing literature.

3.2.2. Corruption

In this paper, the main measure for corruption comes from the PRS Group and reflects the year 2012. This measure ostensibly reflects the degree of corruption in the political system. According to the PRS Group, it focuses on “actual or potential corruption in the form of excessive patronage, nepotism, job reservations, ‘favor-for-favors’, secret party funding, and suspiciously close ties between politics and business” (PRS Group, 2019). Though the focus of this paper is on the quality of public organizations, and its impact on social trust, this measure also appears to capture corruption by elected officials. For the purpose of the paper, this is an imperfect measure, but there are unfortunately, to the knowledge of the author, no publicly available data concerning the public administration alone. The coding of this variable is such that higher points represent less corruption.

The corruption data used for the robustness check in this paper were sourced originally from the QoG time-series dataset from 2019 (Teorell *et al*, 2019). The selected year for this measure is 2011, so as to precede the dependent variable temporally. The measure itself is an index consisting of corruption levels as found in the Corruptions Perceptions Index and the World Governance Indicators. The precise weighting of the two is not made clear in the codebook, but the quality of the original data in combination with the reputation and widespread use of datasets created by the QoG Institute suggest that it is a reliable measure.

3.2.3. Impartiality

The measure for impartiality was selected from the QoG Expert Survey (Teorell *et al.*, 2011). The data cover the years 2008-2012 and is based on expert assessments of the propensity for public sector employees in the country in question to act impartially. According to the survey report, it is measured along a 7-point Likert scale, where 1 corresponds to “never” and 7 corresponds to “always” (ibid). The survey itself was sent out electronically to the various experts. The question itself is worded as follows: “how often would you say that public sector employees today act impartially when deciding how to implement a policy in an individual case?” While it is a relevant measure for this paper, it can be noted that the notion of ‘public sector’ is somewhat broader than the public bureaucracy, as it may include, for example, schools or public-private partnerships.

3.2.4. Bureaucratic quality

To test the effects of non-corruption dimensions of quality of public organizations more broadly, a measure of bureaucratic quality was selected. The PRS Group (2011) developed this measure as part of their International Country Risk Guide (ICRG). The measure itself is an index based on expert analysis, with questions pertaining to the degree of impartiality and resistance towards political pressure in the public bureaucracy, the degree of expertise with which the bureaucracy operates, and the clarity of their recruitment and training mechanisms (PRS Group, 2019). Unfortunately, as it is proprietary data gathered by a private organization, there is little transparency regarding the methodology behind it. According to their codebook, it was gathered using expert surveys, and high scores were given to countries where the bureaucracy was deemed to be of high quality (PRS Group, 2019). Beyond that, one cannot say exactly how the different components of the index were operationalized, nor is it entirely clear exactly what the scope of this measure is, and what concepts it captures. What can be concluded, though, is that it at least does not capture corruption, given that the PRS Group has a separate measure for this. It was for this reason that the measure was selected to represent non-corruption aspects of quality of public organizations. The PRS Group has gathered this data since 1984, and it is a widely used source in academia, which speaks to the validity of their data. Using this measure for bureaucratic quality will help bridge the gap in the literature on the determinants of social generalized social trust, as it sheds light on some less investigated dimensions of quality of government and their relationships with generalized social trust.

3.2.5. GDP per capita

Economic factors, such as prosperity and inequality have also been put forward as contributing to the formation of social trust. Poverty affects peoples' risk-aversion, and can also breed distrust between people (Delhey, Newton & Welzel, 2011). Previous research on social trust has often included prosperity, measured as GDP per capita, as a control variable, with varying results. In some papers, the inclusion of this control had a bearing on the statistical significance of other variables, while in other papers there is no change in the P-values (see You, 2012). Indeed, it has been argued that prosperity or economic development, measured as GDP per capita, creates social trust (Dinesen & Sønderskov, 2012). For that reason, it is included as a control variable in this paper.

The measure of GDP per capita was sourced from the QoG standard dataset for 2016 and refers to data published on the UN National Accounts database for the year 2012 (Teorell *et al.*, 2016). It has been argued previously by certain authors that wealth has an impact on social trust, and that wealthier countries are more likely to also be trusting. For this reason, GDP per capita has been included, as it is the most common way of measuring or estimating wealth.

3.2.6. Uneven economic development

GDP per capita is not the only relevant economic factor to consider when examining social trust. Income inequality has also been tested in this context and it, too, has seen significance to varying degrees (You, 2012). While the former looks at how much of a country's wealth can be split among its citizens, it says nothing of the actual distribution or spread of the wealth. You (*ibid*) argues that economic inequality, typically measured using the GINI index, is a more important driver than mere prosperity as the effect of the latter disappears when controlling for the former. When looking at the effects of dispersion and skewness of income levels in society, they showed that it is the latter that can drive the levels of social trust in a society. That means that people do not become less trusting of others from different income groups, but rather become less trusting of people in general when income is skewed in society, which can instill a sense that the world is unjust or unfair (Rothstein & Uslander, 2005; You, 2012). That sense of unfairness is important, as an individual's perception of justice in the world is linked to their propensity to trust other people (*ibid*). Knack & Zak (2003) also saw a relationship between income inequality and social trust and recommended that governments seeking to build social trust should direct policies at reducing these inequalities.

To test for economic inequalities, this paper utilizes a measure reflecting the degree to which there are ethnic, religious, or regional disparities in the economic development in a country. It includes pressures and measures related to the GINI coefficient, income share of highest 10%, income share of lowest 10%, urban-rural service distribution, access to improved services, and slum population. The data for this measure was sourced from the QoG standard dataset from 2016 and reflects the values for the year 2012 (Teorell *et al.*, 2016).

3.2.7. Democracy

There is some evidence that democracy may play a role in the formation of trust, although it cannot be stated definitively (You, 2012). The proposed effect of democracy may be attributed to increased accountability in public officials, which creates incentives for trust (ibid). As government becomes more democratic, and trust in those institutions increases, so will other organizations in society, such as corporations, schools etc., thus creating not only political trust but also social trust (ibid). Democracy may also play an indirect role in the production of social trust – where it protects the rights of association and speech, it provides necessary space for trust relationships to emerge between individuals, even outside their in-groups of family, clan, congregation, and so on (Warren, 2018). Furthermore, it can encourage generalized trust by reducing the risk of trusting others through security and rule of law, by removing certain particularistic dependencies (through universalist policies), and by increasing the likelihood that trust warrants (justifications for trust) can be spread through schools and other institutions that cut through social ties (ibid). Letki (2018) argues that in order for new democracies to make a shift from particularized trust, which often is the cornerstone of inter-citizen cooperation, they will need to have quality institutions in place.

The variable for the level of democracy was sourced from the QoG standard dataset 2016 (Teorell *et al.*, 2016). It is a combined measure consisting of the average between the Freedom House Democracy scale and the Polity scale (transformed to a 0-10 scale). The data used is for the year 2012. As discussed in the literature review section, there is a case to be made about democracy and its relationship with social trust, and hence it is useful to include it in the analysis, to see if it has any impact on the relationship between quality of bureaucracy and social trust.

3.2.8. Trade openness

The data used in this paper pertaining to trade openness is taken from the QoG standard dataset for 2016 (Teorell *et al.*, 2016). It reflects data published in the World Development Indicators and reflects the sum of imports and exports as a part of GDP for the years 2010-2013. Chan (2007) found that trade openness can have a positive effect on generalized trust cross-nationally, and it can also be found as a control variable in some articles exploring the determinants of generalized trust (see Özcan & Björnskov, 2011).

3.2.9. Ethnic fractionalization

Researchers have previously argued that differences between groups along ethnic or racial lines may have a bearing on the levels of generalized social trust (Dinesen & Sønderskov, 2012 & 2015). The reasoning here would be that familiarity breeds trust, and members of different ethnic groups are not similar enough to consider themselves to be members of the same in-group, thus increasing the social distance between them (2015). When someone looks different, or speaks a different language, it may be more difficult to interact with them, so the transaction costs are greater (*ibid*). Empirically, it has proven difficult to establish whether this theory holds true, and the correlation between diversity and social trust has been attributed by some to other qualities of those societies, such as egalitarian ideals or religious traditions (Uslaner, 2002). Wilkes & Wu (2018) find, in their review of studies of social trust and minority status, that there are gaps in trust levels between different groups in societies, and that it can vary along both racial lines and ethnic lines. Descendants of Northern European immigrants in Canada, for instance, tend to trust more than their South European/Francophone counterparts (*ibid*). Thus, the authors conclude, depending on one's minority status and ethnic group, the chances of being a trusting individual can vary. A slight majority of the findings in the literature looking at the connection between ethnic diversity and social trust suggest that there is a negative relationship, but there is no absolute consensus on this (Thisted Dinesten & Sønderskov, 2015). Nevertheless, cross-sectional research on social trust at the country level typically controls for the level of ethnic fractionalization or diversity.

The measure for this variable is sourced from the QoG dataset 2016 and was gathered in 2012 (Teorell *et al.*, 2016). It was developed by Alesina, Devleeschauwer, Easterly, Kurat & Wacziarg. As described in the codebook for this dataset, the variable reflects racial and

linguistic characteristics. This is a suitable measure for as discussed above, there is also evidence that gaps in social trust also exist along ethnic lines, and not just racial ones.

3.2.10. Colonial heritage

The colonial heritage of the different countries is also accounted for. In this case, the variable chosen is sourced from the QoG standard dataset (Teorell *et al.*, 2019). Originally, it was a categorical variable that indicated whether a country had been colonized by a European power, and which power that was. For this paper, though, it was changed to a dichotomous variable where 0 represents having not been colonized, and 1 corresponds to having been colonized by a European power. There are two ambitions with the inclusion of this variable. The first being to control for any damage to trust that the colonial history might have caused. Secondly, controlling for colonial heritage might account for geographical differences between the countries.

4. Analysis and results

In this section this section, each measure of institutional quality – corruption, impartiality and bureaucratic quality – are leveraged against generalized trust as measured in the WVS. The subsequent section provides a discussion of each of the analysis and of how they compare to one another. The regression tables are set up to show how the coefficients for the main independent variable change as the control variables are added one at a time.

Table 1: Regression results – Corruption (ICRG)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Corruption	0.078*** (0.014)	0.043* (0.023)	0.033 (0.025)	0.080*** (0.027)	0.078*** (0.027)	0.076*** (0.027)	0.093*** (0.024)
Uneven econ.		-0.028* (0.015)	-0.022 (0.016)	-0.028* (0.015)	-0.035** (0.015)	-0.027 (0.018)	0.007 (0.017)
GDPpc			0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Democracy				-0.024*** (0.008)	-0.024*** (0.008)	-0.024*** (0.008)	-0.025*** (0.007)
Trade					-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Ethn. fract.						-0.084 (0.090)	-0.032 (0.079)
Colonial hist.							-0.162*** (0.038)
Constant	0.034 (0.045)	0.300** (0.143)	0.260* (0.149)	0.366** (0.142)	0.443*** (0.155)	0.413** (0.159)	0.217 (0.144)
Obs.	60	59	58	58	57	57	57
R-squared	0.336	0.379	0.381	0.477	0.508	0.517	0.648

Standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

Table 1 reports results for the regression models using the corruption measure from ICRG are shown. Following the theoretical discussion, and due to the coding of the variables, one could expect a positive relationship between the two, which is also the case here as the coefficient for corruption is positive. In the bivariate model (1), the coefficient for corruption is significant at the 99%-level. Model 1 also has a high R-squared value for merely being a bivariate model, suggesting that corruption explains more than a third of the variation of the dependent variable.

The relationship between corruption and generalized social trust holds in almost every model, except for models 2 and 3 where the uneven economic development and GDP per capita variables are introduced, respectively. However, it once again regains significance at the accepted level in model 4, once the level of democracy in the countries is accounted for and it retains this significance in the remaining models. Corruption has a coefficient of 0.093, meaning that an increase of 1 in the level of corruption (slightly less than one standard deviation) is associated with an increase of 0.093 (slightly more than half a standard deviation) in the level of trust. As an example, this would be roughly equivalent to moving from the generalized trust level of Algeria to that of South Korea. The fully specified model (7) also has a high R-squared value, explaining approximately 65% of the variation in generalized social trust. The coefficients of corruption are in the expected direction, as higher values in this measure correspond to lower levels of corruption and can be considered to mean “more freedom from corruption is correlated with more social trust”. All in all, the results discussed above indicate support for H₁, that higher levels of corruption in public organizations will be associated with lower levels of generalized trust.

The robustness of this relationship is checked using the Bayesian measure of corruption from the QoG institute. The regression results are presented in table 8, can be found in the appendix. Model 1 shows that there is a strong bivariate relationship between this measure of corruption and generalized trust, with an R-squared value of 0.327 and significance at the 99%-level. However, once the first control variable is added in model 2, the significance drops and does not regain significance at the 95%-level even in the fully specified model (7). The coefficients are in the expected direction, however. At face value, the coefficients appear weak, with the strongest being in the bivariate model showing that an increase in 1 point of corruption is associated with a 0.007 decrease in social trust. Looking at the standardized coefficient instead, the strength of the relationship becomes more apparent. In the fully specified model (7), an increase in corruption by one standard deviation would be associated with a decrease in trust by 0.291 standard deviations of trust. While this is still a smaller effect than the ICRG corruption measure, it is not quite as negligible as it originally seems. It would be equivalent to moving from the trust levels of Belgium to the levels of Trinidad & Tobago. In all, the results of this robustness check only weakly support H₁.

Table 2: Regression results – Impartiality (QoG Expert Survey)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Impartiality	0.105*** (0.023)	0.032 (0.032)	-0.014 (0.034)	-0.001 (0.032)	-0.001 (0.032)	-0.001 (0.032)	0.003 (0.031)
Uneven econ.		-0.043*** (0.014)	-0.012 (0.017)	-0.018 (0.016)	-0.007 (0.017)	-0.005 (0.022)	0.002 (0.022)
GDPpc			0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Democracy				-0.021*** (0.008)	-0.020*** (0.008)	-0.020** (0.008)	-0.016* (0.008)
Trade					0.001 (0.000)	0.001 (0.000)	0.000 (0.001)
Ethn. fract.						-0.015 (0.106)	0.002 (0.105)
Colonial hist.							-0.078* (0.046)
Constant	-0.207* (0.106)	0.368* (0.212)	0.284 (0.200)	0.404** (0.192)	0.264 (0.216)	0.253 (0.231)	0.216 (0.227)
Obs.	53	52	51	51	51	51	51
R-squared	0.283	0.399	0.495	0.568	0.585	0.585	0.612

Standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

Table 2 reports the results for the regressions using impartiality. Though this measure for impartiality has a bivariate relationship with generalized social trust that is significant at the accepted level, as seen in model 1, this does not hold once the control variables are accounted for in models 2-7. Indeed, once the first control, uneven economic development, is added in model 2, the significance drops below the required level of 95%. It can also be noted that the sign of the coefficient changes between the different models, where in model 2 it is positive, it is negative in models 3-6. Coefficients that change signs can be an indication of multicollinearity, however, according to the VIF-values in table 5 in the appendix, that does not appear to be the case in this instance. Overall, the fully specified model (7) has a rather high R-squared value, explaining 61.2% of the variation in trust. Given that impartiality does not have

a coefficient that is significant at the accepted level, the results do not lend any support for H₂, that a higher degree of impartiality would be associated with a higher level of generalized trust.

Table 3: Regression results – Bureaucratic Quality (ICRG)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Bur. Qual.	0.078*** (0.020)	0.022 (0.025)	0.011 (0.026)	0.060* (0.031)	0.070** (0.030)	0.065** (0.031)	0.091*** (0.027)
Uneven econ.		-0.042*** (0.013)	-0.031** (0.015)	-0.042*** (0.015)	-0.050*** (0.015)	-0.042** (0.018)	-0.008 (0.017)
GDPpc			0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Democracy				-0.024*** (0.009)	-0.026*** (0.009)	-0.025*** (0.009)	-0.029*** (0.008)
Trade					-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Ethn. fract.						-0.073 (0.097)	-0.010 (0.083)
Colonial hist.							-0.180*** (0.040)
Constant	0.063 (0.055)	0.451*** (0.127)	0.372*** (0.139)	0.518*** (0.141)	0.601*** (0.157)	0.579*** (0.160)	0.389*** (0.142)
Obs.	58	57	56	56	55	55	55
R-squared	0.212	0.345	0.357	0.440	0.488	0.494	0.645

Standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

Table 3 shows the results of the regression models using bureaucratic quality as the main independent variable. Bearing in mind what was discussed in the theory section, and the coding of the variables, the expectation is that a higher degree of bureaucratic quality will be associated with a higher level of generalized trust. In model 1, it can be seen that this is true for the bivariate relationship, as the coefficient is both positive and significant at the 99% level. It is evident that there is a strong relationship between bureaucratic quality and trust in a bivariate setting, as the R-squared value suggests that bureaucratic quality explains one fifth of the variation in trust. The significance of the coefficient drops below the accepted threshold in models 2-4, where uneven economic development, GDP per capita, and democracy are introduced. It once again reaches significance at the 95% level with the introduction of the trade openness variable in model 5, and finally reaches significance at the 99% level with all the control variables in place

in model 7. Not only does the significance increase in the fully specified model (7), but the coefficient for bureaucratic quality is larger than in the bivariate setting (1). The coefficient of 0.091 in model 7 means that an increase of the bureaucratic quality score by 1 (slightly less than one standard deviation) is associated with an increase of 0.091 (slightly more than half a standard deviation) in the level of generalized trust in that same country. Thus, a country with a bureaucratic quality score of 3 are expected to be have a trust level of 9.1-percentage points higher than a country with a bureaucratic quality score of 2, which is comparable to the trust differences between Poland and Tunisia. Or, in other terms, an increase in the degree of impartiality by one standard deviation would be associated with an increase of roughly half a standard deviation in trust. In all of the models, the expected direction of the relationship holds. Additionally, the R-squared value of the fully specified model (7) is quite high, at 0.645. This suggests that 64.5% of the variation in levels of trust across the different countries can be attributed to changes in the variables found in the model. The literature suggests that quality of public organizations is related with the levels of generalized trust in countries, which, according to these findings, appears to be the case. Hence, the results discussed above provide support for H₃, that non-corruption aspects of quality of public organizations will be associated with higher levels of trust.

In table 9, in the appendix, the standardized coefficients for the fully specified models for corruption, impartiality, and bureaucratic quality are presented. What can be seen is that the coefficient for corruption is the largest, where an increase by one standard deviation is associated with an increase in the level of trust by 0.67 standard deviations. Bureaucratic quality has the second largest coefficient, with an increase by one standard deviation corresponding to an increase of 0.52 standard deviations in trust. Impartiality, though, has a weak coefficient (and not significant at the accepted level) of 0.015. These results suggest that out of the three aspects of quality of public organizations, what matters the most with regard to generalized trust is the level of corruption. Bureaucratic quality, broadly speaking, certainly has a strong relationship, too, though for that variable it is more difficult to say what it is attributed to.

A correlation matrix between the three main independent variables can be found in table 10 in the appendix. The two measures from the ICRG, corruption and bureaucratic quality, are highly correlated with a coefficient 0.83. However, given the differences in their effects in the results presented above, and the length of time that they have been gathered by the same organization, it suggests that they are to be considered distinct.

5. Conclusion and discussion of results

The goal of this paper was to sharpen our understanding between different aspects of quality of public organizations and their relationships with generalized trust cross-nationally. The theoretical discussion made clear what the expectations would be regarding each of the different aspects. The expectations were explored through statistical models using both corruption and non-corruption aspects of quality of public organizations, and by comparing the results of these.

The results showed that the expectations for the relationship between corruption and trust were held. That is, lower levels corruption in public organizations are associated with higher levels of trust. Strong support for this was found in table 1, where the relationship was significant at the accepted level across all models. However, the robustness check provided a somewhat weak corroboration, with a strong bivariate relationship in model 1, and a coefficient that was significant at only the 90%-level in model 7. Looking back at the first hypothesis of the paper, that a higher level of corruption in public organizations will be correlated with a lower level of generalized social trust, the results presented in this paper support this. Hence, the hypothesis cannot be rejected.

The argument that impartiality in public organizations is associated with higher levels of generalized trust has not found much support in this paper. Here, too, the bivariate relationship was strong, with a significance at the 99%-level and an R-squared of 0.283. However, the direction of the coefficient changed as more control variables were introduced, and it was not significant at the accepted level in the fully specified model. Hence, the second hypothesis, that a higher degree of impartiality will be associated with higher levels of generalized trust must be rejected given the results in this paper. Although the theory suggested that they would be related, the findings are still in line with those of Teorell (2008), who also tested the relationship between generalized trust and impartiality. One possible cause for not finding this relationship is the wording of the question that the impartiality measure is based on. As mentioned in the data section, the question uses the term 'public sector', which is a broader concept than merely the public bureaucracy. For this reason, it could be that the respondents based their responses in part on their assessment of non-bureaucrat members of the public sector, such as teachers or they may even have included public-private partnerships in their assessments.

Concerning the relationship between non-corruption dimensions of quality of public organizations more broadly, the picture is slightly different. The expectation laid out in H₃ was

that higher levels of positive non-corruption aspects of public organizations would be correlated with higher levels of generalized trust. As discussed in the results section, the findings lend support for this claim, although this warrants some discussion. One challenge has been that the methodology provided by the PRS Group (2019) does not explain in detail what exactly is captured by this measure. Furthermore, there does not exist satisfactory alternative measure that captures non-corruption aspects of quality of public organization. Hence, it is unclear what exactly it is that is driving the relationship.

The main question to be answered was to what extent non-corruption aspects of quality of public organizations affect the level of generalized social trust at the country-level. Given the results, and following the discussion above, it appears as though non-corruption aspects are only related to generalized trust broadly speaking. However, as far as specifically impartiality is concerned, the results have failed to provide support for its theoretical relationship with generalized trust. On the other hand, this paper has provided support for the claim that corruption in public organizations is related to generalized trust, although with some reservation as the results from the robustness check failed to reach the accepted significance level. In addition to this, table 9 in the appendix shows that as far as the relative importance of the qualities of public organizations in relation to generalized trust is concerned, corruption has the strongest relationship. The standardized coefficient for that corruption was 0.678, while for bureaucratic quality it was 0.527. Hence, non-corruption aspects of quality of public organizations appear to matter less in relation to generalized trust than corruption.

The argument for institutions being a determinant for generalized trust is such that when people observe or become aware of public officials abusing their power, they will extrapolate this knowledge broadly to people in general. However, corruption in particular can be a more visible, and explicitly illegal form of misuse of public power. Partiality, on the other hand, might not be as clear, and it may also be more difficult to prove. If a public official has taken a bribe from a company that wishes to get a license, for instance, it might be possible to track the money. However, if a company were granted a license on the basis that its owners belonged to a certain ethnic or religious group, it may be more difficult to prove the motivation of the public official for granting it. Hence, it may not be made public and therefore may not lead to a breakdown of generalized trust. Measuring impartiality in such a way that it reflects what the general public perceives, which is important as they are the ones exhibiting the generalized trust, is therefore difficult and it is not clear that the measure used in this paper truly does this.

As far as theoretical and policy implications are concerned, the results here are merely general, and any specific lessons are difficult to draw. The reason for this is the imperfect nature of the data used, where the measure for impartiality may be too broad, and the corruption and bureaucratic quality measures lack transparency in the methodology. If policymakers wish to improve the levels of trust in a setting characterized by low bureaucratic quality, they may see better results focusing on controlling corruption rather than improving non-corruption qualities of public organizations. However, if they wish to target policies on the latter, a specific non-corruption quality cannot be recommended on the basis of the results in this paper.

The results here should hopefully prompt more research that is devoted to exploring whether the theory that quality of government affects social trust truly holds as it is, or whether it is merely corruption that has a causal impact on social trust. To this date, there are no published papers known to the author that indicate that impartiality on its own, for instance, has an effect on social trust. Instead, what is found in the literature is composite measures using both corruption and impartiality. Were one to leave out impartiality in those instances, it would be interesting to see whether the results would be the same. If more specific measures of different non-corruption qualities of public organizations are developed, future researchers could test more specifically which ones are important for generalized trust and provide more precise implications for policymakers.

In conclusion, this paper has identified a gap in the literature on quality of government and generalized trust, where the relative importance of non-corruption aspects has not been greatly explored. The results of this paper supported the argument that non-corruption aspects do matter, though the exact qualities that are at play could not be identified. The theorized relationship between impartiality and generalized trust has not been corroborated, though corruption was found to be related to generalized trust. More research is needed to fully shed light on the relationship between non-corruption aspects of quality of public organizations and generalized trust.

6. Appendix

6.1. Assumptions

Linear regression is hinged upon a number of assumptions. Without data that meets these assumptions, the validity of the tests can be called into question. These assumptions include linearity, normal distribution of cases, no perfect multicollinearity, no auto correlation, and homoscedasticity. These assumptions are checked for the main independent variables – corruption, impartiality, and bureaucratic quality.

6.1.1. Corruption (icrg_corr)

Linearity

As can be seen in the scatterplot in Figure 1, the relationship between corruption and the trust measure appears almost linear. There is a degree of skewness to the right, as most cases are clustered around the lower values of corruption.

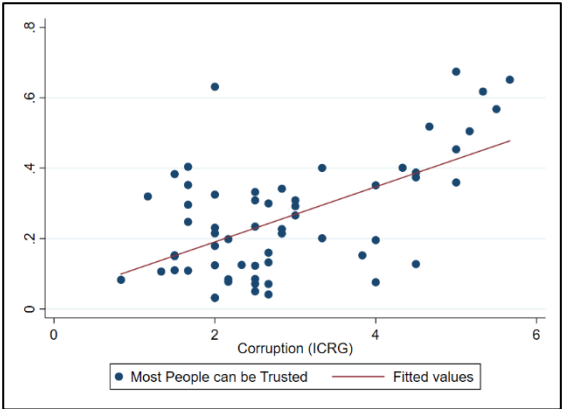


Figure 1: Linearity check - corruption

Normal distribution of errors

As can be seen in Figure 2, the distribution of errors for this model appears to take on an approximately normal distribution. Hence the assumption of normally distributed errors is held.

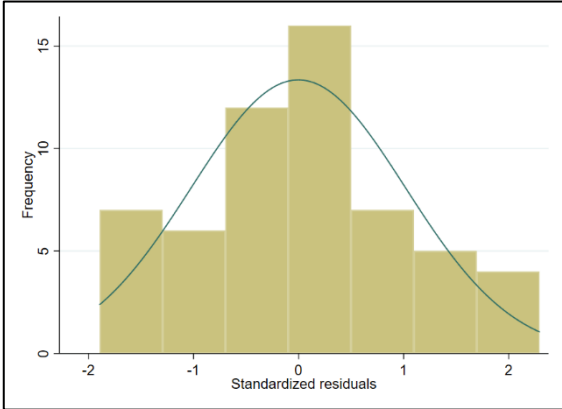


Figure 2: Normal distribution of errors - corruption

No perfect multicollinearity

Table 4: Variance inflation factor - corruption

Variable	VIF	VIF/1
Uneven econ.	5.38	0.185760
Corruption	4.22	0.236786
GDPpc	3.14	0.318428
Democracy	2.04	0.490576
Colonial hist.	1.78	0.563189
Ethn. Fract.	1.69	0.590629
Trade	1.31	0.762672
Mean VIF	2.80	

As can be seen in table 4, there are no variables that exhibit a variance inflation factor of more than 10. As such, there does not appear to be a problem of multicollinearity for this model, and the assumption can therefore be held.

Homoscedasticity

As shown in Figure 3, there does not appear to be an issue of heteroscedasticity, as the spread of fitted values does not clearly change.

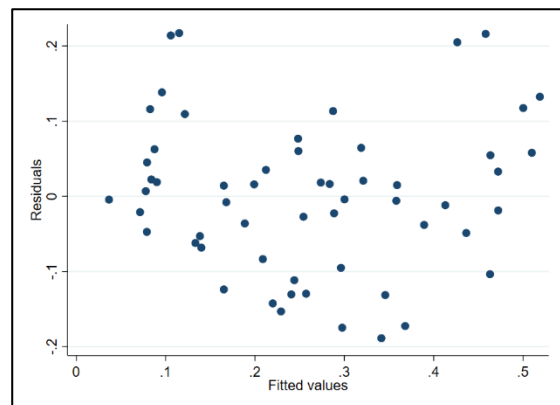


Figure 3: Homoscedasticity check - corruption

6.1.2. Corruption (bci_bci)

The assumptions for linear regression for the robustness check were performed in the same fashion as for the main corruption variable. However, as it is not the main variable of interest, and for the sake of space, the associated figures and tables have been omitted from the appendix.

6.1.3. Impartiality (q4)

Linearity

The assumption of linearity for the impartiality variable is checked in Figure 4. There is a rather clear linear trend in the data, and as such the assumption is held.

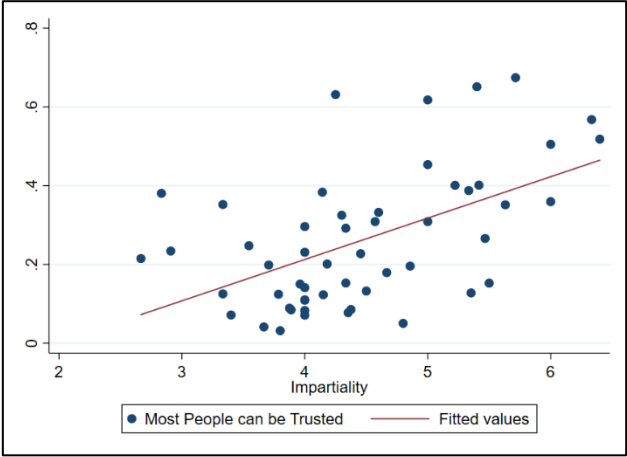


Figure 4: Linearity check - impartiality

Normal distribution of errors

Figure 5 shows the histogram for the assumption of normal distribution of errors. From the figure it appears that the errors do have an almost normal distribution, though the true shape cannot be seen due to the values that the variables have.

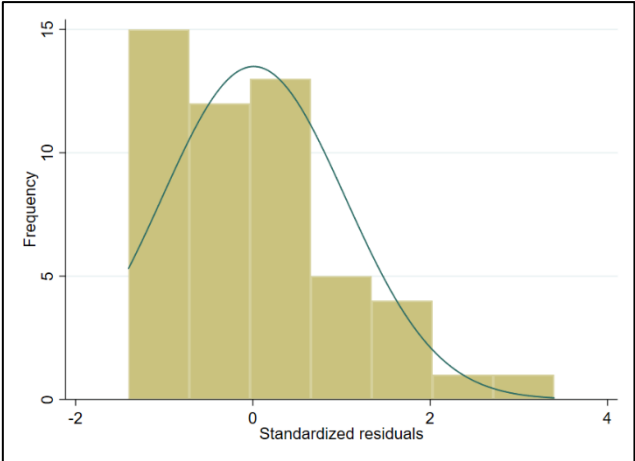


Figure 5: Normal distribution of errors - impartiality

No perfect multicollinearity

Table 5: Variance inflation factors – impartiality

Variable	VIF	VIF/1
Uneven econ.	6.81	0.146846
GDPpc	4.76	0.210244
Impartiality	2.82	0.354847
Ethnic fract.	2.05	0.488169
Democracy	1.90	0.527582
Colonial hist.	1.84	0.543967
Trade	1.52	0.659346
Mean VIF	3.10	

As can be seen in table 5, there are no variables that exhibit a variance inflation factor above 10. Hence, there is no indication that the assumption of no perfect multicollinearity is violated. As such, the assumption is held.

Homoscedasticity

The assumption check for homoscedasticity can be seen in Figure 6. As can be seen, the spread of the observations does not change noticeably throughout, and therefore the assumption is held.

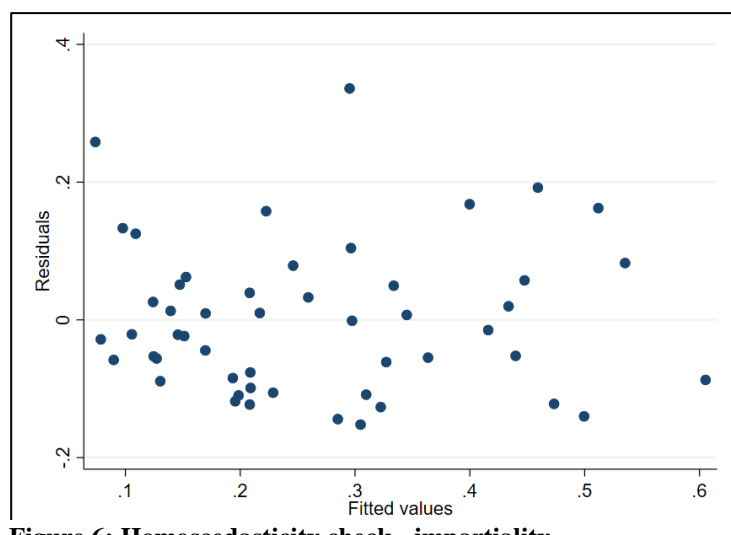


Figure 6: Homoscedasticity check - impartiality

Influential cases

When checking the studentized residuals, it was found that China has a value of 3.9. Values above 3 or below -3 are normally an indication of influential cases and can warrant further exploration. To see whether China exerted a strong influence on the relationship between generalized trust and impartiality, the regression was run with and without the observation. As can be seen in in table 6, the observed relationship did not change substantially. The coefficient

for impartiality only reaches significance at the accepted level in model 1, and the issue of the changing of the sign is still present. Hence, this case does not appear to be influential, and the assumption is held.

Table 6: Regression results – Impartiality, China dropped

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Impartiality	0.107*** (0.022)	0.016 (0.028)	-0.030 (0.028)	-0.020 (0.028)	-0.021 (0.028)	-0.025 (0.028)	-0.022 (0.028)
Uneven econ.		-0.055*** (0.012)	-0.025* (0.014)	-0.027* (0.014)	-0.014 (0.015)	-0.028 (0.019)	-0.022 (0.020)
GDPpc			0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Democracy				-0.012* (0.007)	-0.011 (0.007)	-0.012* (0.007)	-0.010 (0.007)
Trade					0.001* (0.000)	0.001 (0.000)	0.001 (0.000)
Ethn. fract.						0.109 (0.095)	0.112 (0.095)
Colonial hist.							-0.045 (0.040)
Constant	-0.224** (0.100)	0.499*** (0.185)	0.425** (0.171)	0.477*** (0.170)	0.312 (0.186)	0.394* (0.199)	0.365* (0.200)
Obs.	52	51	50	50	50	50	50
R-squared	0.323	0.517	0.616	0.641	0.669	0.679	0.688

Standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

6.1.4. Bureaucratic quality (icrg_bq2012)

Linearity

When checking the linearity of the relationship between trust and bureaucratic quality in Figure 4, it is clear that there is a slight curve to the line of best fit. What can be done in these situations to remedy this is to check for outliers and influential cases. Furthermore, if the non-linear relationship persists, a log variable can be generated, in hopes that the spread of the data improves and reduces any curvature. Unfortunately, in this case there is very little spread among the data points for bureaucratic quality, with practically just four different values.

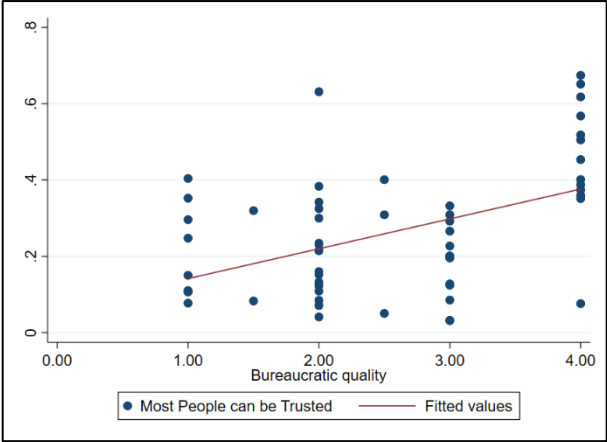


Figure 7: Linearity check - Bureaucratic quality

Normal distribution of errors

Upon first inspection, the assumption of a normal distribution of errors appears to hold for this model.

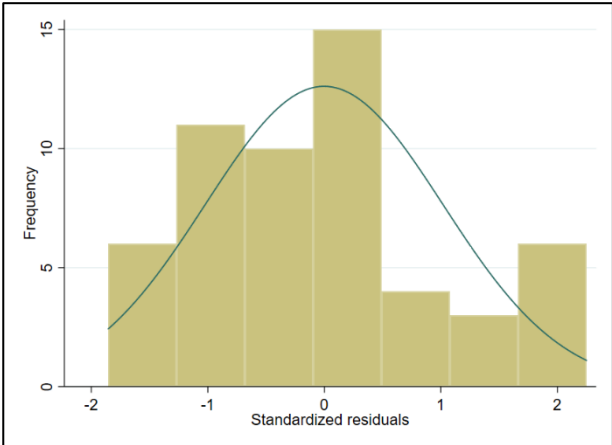


Figure 8: Normal distribution of errors - Bureaucratic quality

No perfect multicollinearity

The assumption of no perfect multicollinearity was checked in *Stata* using the ‘estat vif’ command. This provides the variance inflation factor, which is used to determine the severity of any multicollinearity. The values are presented in table 7. What was found in the model for bureaucratic quality was that no variable has a VIF of more than 10, which would be a red flag for multicollinearity. The measure for uneven economic development has the highest VIF of 5.07, while the average for the entire model is 2.69. Furthermore, when looking at a correlation matrix for all the variables, it was found that none of them display a correlation of 0.8 or above. Hence, this assumption appears to be met.

Table 7: Variance inflation factors – bureaucratic quality

Variable	VIF	1/VIF
Uneven econ.	5.07	0.197370
Bureaucratic quality	3.26	0.306770
GDPpc	3.19	0.313851
Democracy	2.30	0.434558
Colonial hist.	1.86	0.537693
Ethn. Fract.	1.80	0.554158
Trade	1.38	0.725951
Mean VIF	2.69	

Homoscedasticity

The assumption of homoscedasticity was explored using a residuals plot. It is clear when looking at the plot that the spread of the residuals from the best fit line does not change in a meaningful way along the x-axis. Hence, it can readily be assumed that the data is not heteroscedastic.

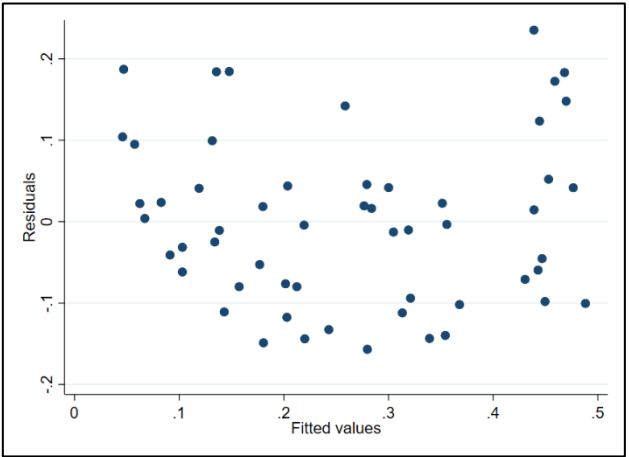


Figure 9: Homoscedasticity check - Bureaucratic quality

Influential observations

When checking for influential observations, there was no cause for concern. No cases were found to have a studentized residual above 3, or below -3. Only the Netherlands had a value above 2, with 2.4 being the actual value. Hence there do not appear to be any influential observations.

6.2. Statistical results

This section of the appendix holds additional tables which are relevant for the analysis of the results.

6.2.1. Robustness check - Corruption

Table 8: Regression results - Corruption (Bayesian)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Corruption	-0.007*** (0.001)	-0.003* (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.003* (0.002)
Uneven econ.		-0.035*** (0.013)	-0.029* (0.014)	-0.037** (0.016)	-0.040** (0.016)	-0.032 (0.019)	-0.001 (0.019)
GDPpc			0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Democracy				-0.009 (0.006)	-0.010 (0.007)	-0.010 (0.007)	-0.008 (0.006)
Trade					-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Ethn. Fract.						-0.075 (0.095)	-0.046 (0.086)
Colonial hist.							-0.139*** (0.039)
Constant	0.554*** (0.058)	0.603*** (0.059)	0.499** * (0.116)	0.613*** (0.141)	0.661*** (0.163)	0.623*** (0.170)	0.517*** (0.157)
Obs.	63	62	61	61	61	61	61
R-squared	0.327	0.402	0.403	0.423	0.427	0.434	0.544

Standard errors are in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

6.2.2. Regression table – standardized coefficients

Table 9: Regression table showing standardized coefficients for the fully specified models

	Corruption (ICRG)	Impartiality	Bureaucratic quality
Corruption (ICRG)	0.678		
Impartiality		0.015	
Bureaucratic quality			0.527
Uneven econ.	0.082	0.028	-0.096
GDPpc	0.081	0.752	0.097
Democracy	-0.435	-0.258	-0.487
Trade	-0.045	0.108	-0.087
Ethn. Fract.	-0.044	0.003	-0.014
Colonial hist.			
Obs.	57	55	55
R-squared	0.648	0.612	0.645

6.2.3. Correlation matrix

Table 10: correlation matrix between main independent variables

	Corruption (ICRG)	Impartiality	Bureaucratic quality
Corruption (ICRG)	1.0		
Impartiality	0.762	1.0	
Bureaucratic quality	0.830	0.697	1.0

6.3. List of countries

Table 11: List of countries contained in the dataset for this study

Bahrain	Egypt	Kuwait	Pakistan	Taiwan
Bangladesh	El Salvador	Kyrgyzstan	Palau	Tajikistan
Barbados	Equatorial Guinea	Laos	Panama	Tanzania
Belarus	Eritrea	Latvia	Papua New Guinea	Thailand
Belgium	Estonia	Lesotho	Paraguay	Timor-Leste
Belize	Ethiopia	Liberia	Peru	Togo
Benin	Fiji	Libya	Philippines	Tonga
Bhutan	Finland	Liechtenstein	Poland	Trinidad and Tobago
Bolivia	France	Lithuania	Portugal	Tunisia
Bosnia and Herzegovina	Gabon	Luxembourg	Qatar	Turkey
Botswana	Gambia	Macedonia	Romania	Turkmenistan
Brazil	Georgia	Madagascar	Russia	Tuvalu
Brunei	Germany	Malawi	Rwanda	Uganda
Bulgaria	Ghana	Malaysia	Samoa	Ukraine
Burkina Faso	Greece	Maldives	San Marino	United Arab Emirates
Burundi	Grenada	Mali	Sao Tome and Principe	United Kingdom
Cambodia	Guatemala	Malta	Saudi Arabia	United States
Cameroon	Guinea	Marshall Islands	Senegal	Uruguay
Canada	Guinea-Bissau	Mauritania	Serbia	Uzbekistan
Cape Verde	Guyana	Mauritius	Seychelles	Vanuatu
Central African Republic	Haiti	Mexico	Sierra Leone	Venezuela
Chad	Honduras	Micronesia	Singapore	Vietnam
Chile	Hungary	Moldova	Slovakia	Yemen
China	Iceland	Monaco	Slovenia	Zambia
Colombia	India	Mongolia	Solomon Islands	Zimbabwe
Comoros	Indonesia	Montenegro	Somalia	
Congo	Iran	Morocco	South Africa	

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