



LUND UNIVERSITY  
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Bachelor's thesis

# **Determinants of Corruption**

## **- a Study of Zambian Ministries**

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## **ABSTRACT**

Corruption is indisputably an immense obstacle for many developing countries in their endeavor to prosper economically. Zambia, a peaceful, politically stable democracy is still facing many of the problems connected with corruption. Corruption has so far mostly been measured on a state-level, but in our thesis we narrow the field of investigation down to the ministry-level. We use questionnaires to get a controlled sample and a different perspective. Our questionnaires are directed to the officials and bureaucrats working at the headquarters of each of the twenty-one ministries in Zambia.

With public choice as theoretical background we investigate various variables that we predict can be related to corruption. Our findings show significant correlation between the amount of low paid employees and corruption and the level of social trust and corruption, where the first proved to be the stronger correlation. More exactly we manage to show that the lower the share of low paid ministry officials, the higher the level of the perceived corruption will be, and the higher the level of social trust is, the lower the level of perceived corruption is. However, there is reason to continue the research to establish the determinants of corruption. This could preferably be done with greater data samples and more qualitative researches.

Keywords: Corruption, Zambia, Public choice, Determinants of Corruption, Bureaucracy

## **PREFACE**

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## **LIST OF ABBREVIATIONS**

<b>ACC</b>	Anti-Corruption Commission
<b>CPI</b>	Corruption Perceptions Index
<b>FDI</b>	Foreign Direct Investment
<b>LDC</b>	Less Developed Country
<b>GSSP</b>	General Salary Scale Post
<b>GNP</b>	Gross National Product
<b>ICRG</b>	International Country Risk Guide
<b>NGO</b>	Non-Governmental Organization
<b>PRSP</b>	Poverty Reduction Strategy Paper
<b>PSMD</b>	Public Service Management Division
<b>Sida</b>	Swedish International Development Cooperation Agency

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# 1. INTRODUCTION

The existence and prevalence of corruption is a common problem for the world's Less Developed Countries' (LDC's) economies and it causes a number of problems for their populations. Embezzlement, bribery, poor sustainment of property rights and other corrupt behaviors lead to lost investment, lower general trust and under-provision of public goods. But even if the consequences of corruption are well known the causes are not. Moreover, most existing studies dealing with causes of corruption are based on country-level data but these kinds of studies are likely to miss many of the nuances of the corruption-problem.

Economic theory in general and Public Choice theory in particular have a simple answer to the question of what causes corruption: people become corrupt if they benefit from it. If the perceived costs of being corrupt (e.g. losing one's wages) is less than the perceived profits of the same (e.g. income from bribes) a rational individual will choose to be corrupt. So to find the cause of corruption we must find what changes the costs and profits of being corrupt. We will use the statistical tools of regression analysis to approach this problem.

Such regressions have been done over and over again by a number of economists such as La Porta and his colleagues (1999) who investigated what affects the quality of government. But this investigation, like most others, relies on regressions that are based on either country or (federated) state-level aggregates (e.g. Goel and Nelson 1997). The choice of these levels is probably due to the amount of information available. Although often interesting and telling, these types of investigations will never show the whole picture. For that reason these studies need to be complimented by investigations carried out on a sub-state level dealing with differences in the level of corruption within the government apparatus. We will therefore attempt to perform such a sub-state-level investigation.

For this purpose we have chosen to study Zambia, a peaceful democracy in Southern Africa. Zambia has a history of corruption and continues to struggle to reduce corruption at all levels of government. Since the sub-state-level encompasses a large number of institutions, courts and other official bodies we need a focal point to limit the otherwise massive scope. Of the institutions available we have chosen to base our study on Zambia's twenty-one



ministries, in part because of their limited number and ease of access and in part because their commonness in countries across the globe makes for easier comparison to future research.

An obvious problem with this kind of investigation is the lack of collected and freely available data. We have chosen to gather our own data with the help of questionnaires distributed among ministry officials. This way we can use the perception of the ministry officials as a proxy for the real level of corruption. Using our own questionnaires also gives us the possibility to gather information, not just about the level of corruption, but also facts about a number of interesting hypotheses. By performing our investigation on a ministry-level we can also test hypotheses that are hard to control for in an aggregated analysis.

This thesis is meant to offer a new perspective on an old problem. Hopefully the results will shed some new light not just on the workings of government corruption in Zambia but also on the causes of corruption in general.

## **1.1 Aim**

The aim of this thesis is to use Public Choice theory and corruption perception to see what variation in the level of corruption in Zambian ministries that can be explained by factors affecting the direct cost and benefits of corruption. This will be done with the help of regression analysis.

## **1.2 Method**

We use economic theory to explain differences of corruption level; more specifically we use Klitgaard's model for corrupt behavior among public officials. Klitgaard's model is a simple but comprehensive way to explain corruption using a Public Choice perspective. Empirical data in the thesis comes from a survey performed at the Zambian ministries. Visits were made

at 21 ministries where public officials were asked to answer our questionnaire<sup>1</sup>. In total over 400 questionnaires were distributed and collected. The questionnaire asks the public officials to rate the general level of corruption in Zambia and then to rate how their own and all other ministries compare to the general level. The average scores given to the various ministries are then tested to see if there is any correlation with a number of variables. Questions about the organization and attitude at the ministries are also asked. All information has numerical values to allow calculation when doing the regression. Appendix A presents the questionnaire. We ran regressions using the data collected using the ministries' average corruption score (adjusting for the scores given to one's own ministry) as our dependent variable. Data on additional variables comes either from the questionnaire or from official statistics collected from the Zambian "Activity Based Annual Budget" for 2010 (Republic of Zambia 2010) and the Public Service Management Division (PSMD).

### **1.3 An overview of the thesis**

Chapter two defines corruption and its relation to development is discussed. We also discuss the situation in Zambia specifically. Chapter three introduces our theoretical model and presents the hypotheses to be tested. This is followed by an overview of previous research in chapter four. The empirical results are presented and analyzed in chapter five. The thesis is concluded in chapter six by a discussion of the research and suggestions for future research.

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<sup>1</sup> We initially planned to include the offices under the Ministers of Presidential Affairs and Minister of Gender Development. These are not de facto ministries but offices under the President and we have chosen to omit them due to a lack of comparable data.

## 2. CORRUPTION

### 2.1 Definition of corruption

When trying to compare perceived corruption it is essential that the same issue is measured at all locations, people must agree on what we are measuring. To measure corruption it is first necessary to define it, which is not as a simple task as one might think. The problem is not a lack of alternatives, definitions of corruption abound, but to choose one that is comprehensive yet specific and at the same time comprehensible. These three criteria are necessary to minimize the risk of misunderstanding. We have therefore chosen to use the following definition:

*Corruption is when a holder of public office motivated by private gain gives preferential treatment that is not officially approved.*

Our definition is essentially a version of Kurer's definition of corruption being “*violations of non-discrimination norms governing the behavior of holders of public office that are motivated by private gain*” (Kurer 2005, 230). Rothstein and Teorell make a good case arguing that such a definition is superior to other definitions, such as ones containing words like “abuse” or “misuse” that themselves need definition (2008, 170f). The small changes (e.g. changing “violations of non-discrimination norms” to “preferential treatment that is not officially approved”) are made to improve the functionality of the definition, not to change its meaning. We are simply trying to make it easier to understand and hence decrease the risk of misinterpretation.

The reason we choose this definition is that it fulfills all of our demands; it is comprehensive as it encompasses all actions one usually considers to be corrupt such as bribes and favoritism and any other action of the same effect. At the same time it is specific as it only deals with corruption and make a clear distinction of what is and what is not corruption. Lastly it is comprehensible; our version sounds less academic and is more easily understood than Kurer’s original.

## **2.2 Corruption and development**

Corruption is one of the greatest factors challenging LDC's today. Lack of transparency, poor governance and fiscal policy, and bad upholding of immaterial rights can all be signs or residuals of a high level of corruption. Corruption destroys opportunities, poor fiscal policy can limit improvement of infrastructure and lacking upholding of immaterial rights creates uncertainty and makes it harder to receive Foreign Direct Investments (FDIs).

One of the fundamental problems with corruption is that it generally results in reduced tax revenues and thus reduces the government budget. The result will be an under-provision of public goods and an altogether weaker welfare state. (Chetwynd 2003, 3)

When studying economic consequences of corruption it is important to understand how investments are being dealt with in corrupt countries. Bribes are common for production and transportation of goods, obtaining gas and water etc. When all these bribes add up it can be very costly for an investing firm, in particular if the firm is small. These bribes can be viewed as a form of extra tax, and of course all extra costs reduce incitements to invest (Myint 2000, 47f).

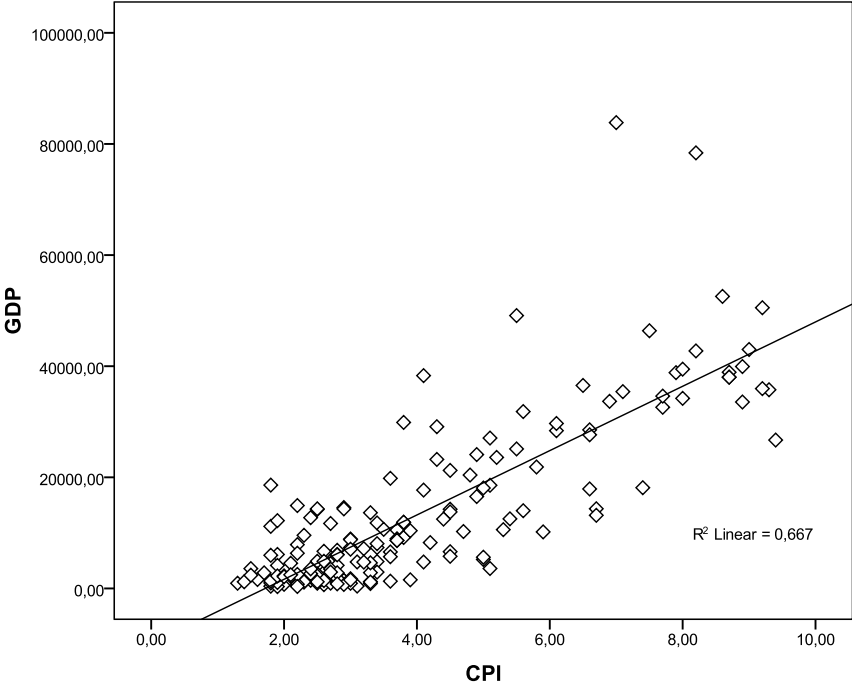
Bribes can also cause social costs, for example when building contractors bribe safety inspectors to accept unsafe and faulty buildings to save money, this can in extreme cases lead to loss of human lives. Bribes are an increasing problem in large infrastructure projects, causing great damage and social costs (Ibid, 48f).

Financial scams in corrupt countries where people have lost their entire life savings are another important concern. Financial corruption does not only create an unfair redistribution of wealth but it also weakens the general trust and belief in the financial system, which then can result in less total savings and investments and making it even harder to reach sustainable growth (Ibid, 50).

All of the above mentioned phenomena have a negative impact on a country's growth rate and over time that country's standard of living. There is today a clear relationship between corruption and standards of living across the world. Figure 1 shows this relationship using corruption data from Transparency International's Corruption Perceptions Index (CPI),

where higher scores show lower levels of corruption. Causality is clearly an issue with data such as this but it is apparent that corruption and economic growth are linked.

**Figure 1.** Corruption versus GDP.



*GDP per capita (PPP) 2009 (International Monetary Fund, 2010) versus  
Corruption Perceptions Index 2009 (Transparency International 2009 (1))  
for all countries where data was available.*

In other words, corruption and economics are deeply related. Despite this, corruption and its effects have mostly been analyzed in the political science area. But over time the acceptance of analyzing corruption in economics has greatly increased. It is today viewed as one of the most important research areas in developing economics, and one of the worst problems a developing economy can face.

## 2.3 Corruption in Zambia

Zambia is in many ways a very corrupt country. Transparency International's 2009 CPI give the country a composite score of 3.0 out of 10, making it the 99<sup>th</sup> least corrupt country of the 180 in the index. In comparison Niger has a score of 2.9 and Liberia 3.1 (Transparency International 2009 (1)). Zambia's score is actually a step up from the 2008 score of 2.8 which put Zambia in the 115<sup>th</sup> place, but Zambia is still a country where corruption poses a great challenge (Transparency International 2008). The situation was brought to the spotlight by a Ministry of Health-scandal in 2009 where about 32billion kwachas (some 50million SEK) of public funds were embezzled. Much of the funds came from bilateral aid and the scandal, which received some international press attention, generated a debate about international aid in Sweden, one of the major donors to the Zambian health sector (Svenska Dagbladet 2009). The Zambian government later paid back almost 7million SEK to the Swedish International Development Cooperation Agency (Sida) and struck similar deals with other donor countries (Dagens Nyheter 2010).

The Zambian government acknowledges the problems corruption causes. The government's concern can be seen in their Poverty Reduction Strategy Paper (PRSP) according to which the government aims to reduce the level of corruption significantly. The goal is to achieve "total adherence to principles of good governance by 2030" (PRSP 2007, 281). To achieve this, an Anti-Corruption Commission (ACC) was established already in 1980 (ibid, 278). Its objectives are to prevent corruption, prosecute offenders and to "*educate the public about corrupt practices and foster public support in the fight against the scourge*" (ibid, 287). The ACC has, however, severe problems with these functions due to under-funding and poor staffing levels. The Commission's own strategic plan pointed at several weak spots in the management including delays of policy implementation, staff not adhering to policies and incorrect information given to the public (Doig et al 2005, 253f). As an example, it was not the ACC that discovered the corruption scandal mentioned above, it required a whistleblower to make it public (Svenska Dagbladet 2009).

## **2.4 Corruption Perception**

The level of corruption in an institution or country is nearly impossible to assess directly. As corrupt actions are rarely done in public there is no official statistics of how much corruption that is actually taking place. Therefore some proxy will always have to be used when measuring how much fraud, bribery and such there is within an institution. One common proxy is to use people's perception to compare and measure corruption levels. The CPI discussed above is one of the most known corruption measurement based on perception. It gathers perception data from a number of different studies using different group's perceptions to construct their aggregated index. Transparency International argues that this is a reliable way to study corruption. They further argue that it is better than using data on number of court cases or other such statistics as this is as much a measurement on the effectiveness of the judiciary system and media as it is a measurement of the level of corruption (Transparency International 2009 (2)).

In our study we use the perception of the ministry officials themselves, which has the advantage of using the inside-information concerning corruption likely present among Zambian government officials. By using a relative scale on our questionnaires (Appendix A) our proxy only deals with the differences between ministries and not the overall score. So the average score of each questionnaire (if people think corruption is rampant or virtually non-existent) does not matter, only the differences in scores between the ministries. We exclude the scores officials gave to their own ministry to avoid biased opinions.

Even if we have worked hard to create a well-functioning proxy there are some weaknesses with this perception proxy. First of all, the sample of government officials might not be completely random as the amount of questionnaires we received from each ministry depended on the openness of that ministry.

Another weakness with our perception proxy is the possibility that high profile corruption cases such as the one at the Ministry of Health (who got the lowest score of all ministries) might have a disproportionate effect on people's view of a ministry. There is probably a high correlation between the number of articles printed about corruption in a ministry and the

scores given on our questionnaires. The causality works both ways here as much publicity clearly might be a sign of widespread corruption but it is likely that only a few cases of corruption make it to the press. We choose to ask government officials precisely because they are likely to have a greater insight in the workings of the ministries than journalists but this does not mean that they are unaffected by the press.

One possible proxy that can be used instead in an investigation like this is the number of corruption complaints filed against a ministry. As all ministries studied are in the same country the argument of Transparency International that this instead of measuring corruption level might measure differences in media and judiciary system does not apply. However, this gives a disadvantage to ministries such as Ministry of Home Affairs (who handle the police) as it deals with a far greater amount of people likely to report corruption than say Ministry of Foreign Affairs.



## 3. THEORETICAL MODEL

### 3.1 Public Choice

Public choice theory gives a clear cut explanation of the behavior of politicians and bureaucrats, and we will use it and its assumptions as our main theory. We will use it for selecting and analyzing our hypothesis when we test the perception of the level of corruption among the ministries. Public choice has been defined by Mueller as:

*“The economic study of nonmarket decisionmaking, or the application of economics to political science. The subject matter of public choice is the same as that of political science: the theory of the state, voting rules, voter behavior, party politics, the bureaucracy, and so on. The methodology of public choice is that of economics, however. The basic behavioral postulate of public choice, as for economics, is that man is an egoistic, rational, utility maximizer.”* (Mueller 1979, 1)

The rational and utility maximizing attitude affects all of a person’s action, his or her consumption, voting, choice of job and so on. A public-choice theorist would believe that people such as politicians are more motivated by self-interest, than fulfilling their real task and work for the voters and a better community and country.

Bureaucrats, just like politicians, are supposed to work for the public interest, but according to public choice theory they instead work for their own interests and do what they can to maximize their own utility. Niskanen, a well known public choice theorist, claims that the bureaucrats are mostly motivated by *“salary, prerequisites of the office, public reputation, power, patronage [...] and the ease of managing the bureau”* (Niskanen 1973, 22). So governmental bureaucracies might e.g. seek to increase their budget, even if this is not the best for the state as a whole, since working for a bureau with a higher budget is more prestigious than working for one with a smaller one (Buchanan and Tullock 1977, 147).

Another aspect of the misuse of power is rent-seeking behavior, which considers various forms of seeking preferential treatment in the realm of public decision-making, for example,

through competitive lobbying and corruption (Lambsdorff 2007, 109). This is seen when individuals, organizations or firms use resources to persuade public decision-makers in order to get economically beneficial outcomes. An important issue of rent-seeking is that it is socially costly. At its best it can be a zero-sum activity but most likely there will be deadweight-loss from opportunity costs, when resources could be better spent on other things than lobbying, and thus it becomes a negative-sum activity (Mueller 1997, 507).

Even so, taking bribes or acting in other corrupt ways can, according to public choice theory, be rational for the individual as the theory assumes an egoistic behavior. Hence corruption is to be expected if the perceived advantages are greater than the perceived disadvantages (Goel and Rich 1989, 270).

### **3.2 Public Choice and Corruption**

Public Choice theory can consequently in many ways explain the existence of corruption. The basic assumption that a civil servant acts the same way at work as he or she would in the market place allows us to investigate corruption with economic tools.

Klitgaard (1998, 69f) explains this as a principal-agent-client problem where the principal is the department (or even the public interest as a whole), the agent is the public official and the client is the person contacting the agent. We will focus on corruption among public officials, the agents. Agents being corrupt or committing corrupt acts can be seen as taking part in a gamble. The gamble has two options and three possible outcomes. You can choose not to take part in the gamble by not being corrupt. In this outcome you will receive your salary. If you choose to take part in the gamble and to be corrupt there are two possible outcomes: If you avoid detection you will receive your salary plus benefits in terms of bribes. If you get caught you will lose your salary and possibly face prosecution.

Now, if the net expected benefits from being corrupt is greater than the total benefits of being un-corrupt a rational individual would choose to be corrupt. Klitgaard describes this as follows:

*“So, I will be corrupt if: the bribe minus the moral cost minus [the probability I am caught and punished] times (the penalty for being corrupt)] is greater than my pay plus the satisfaction I get from not being corrupt.” (ibid, 70)*

Other costs of corruption not borne by the agents can be seen as negative externalities borne by the principal and is not likely to affect the individual’s choice.

The factors deciding the odds of the gamble are in turn affected by a wide variety of things e.g. an improvement of law enforcement can increase the risk of getting caught, shifting the probabilities of the gamble and decreasing the expected outcome of participating. However, different individuals might receive different utility from different expected incomes. Outcomes depend on how risk averse or risk loving individuals are; a risk averse individual requires a higher expected income to participate than a risk lover would. But changes that increase expected income make all individuals more prone to participate in a gamble, risk averse individuals just need a greater increase than risk lovers. Therefore, assuming the distribution and level of risk aversion and risk loving are the same among the different ministries, it is still meaningful to use regression analysis.

We assume that many of the other things that are likely to affect these factors are similar within a country. All the departments in Zambia follow the same constitution and are controlled by the ACC. Any difference in the level of corruption between departments is instead likely to come from other aspects such as differences in the organization of the departments.

### **3.3 Hypotheses**

Modeling corruption as a gamble, there are three ways the organizational structure might affect the level of corruption:

- By changing the income of being corrupt without getting caught

- By changing the probabilities of the gamble
- By changing the certain income of not participating in the gamble.

The common effect of all of these is to change the difference between the certain income of not participating and the expected income of gambling. We test a number of hypotheses that each will be an explanatory variable in the final regression.

There is a problem of causality with a few of the hypotheses, as corrupt ministries probably are more likely to engage in more rent seeking behavior towards the central government than an uncorrupt one would. As an example, ministries might have many employees because they are corrupt, and not the other way around. Corrupt public officials might try to increase their budget so they can employ more people (friends or people who pay to get the job). We can therefore only be certain of whether or not a correlation exist, not the direction of the causal link.

### **3.3.1 Number of employees**

One interesting factor to investigate is the number of employees. It seems likely that a larger organization is harder to control than a smaller one and direct responsibility therefore difficult to attain, which improves the odds of corrupt actions going unnoticed by authorities. But more people also mean less individual influence and therefore it might be harder to be corrupt while avoiding discovery by your fellow workers. As a result, corrupt acts might require coordination by public servants which means an extra cost of being corrupt. However, since all employees still are likely to gain from corruption such costs are likely to be small. Thus the expected outcome of the gamble increases and *more people are likely to become corrupt as the number of employees increase.*

### **3.3.2 Budget per employee**

*The size of the budget is also likely to be positively correlated with corruption. As the amount of money handled by each public servant increases so does the benefits of corruption. On the other hand, more money is likely to attract the attention of the ACC. But as we have noticed the ACC has been largely ineffective and hence the perceived risk of getting caught is not to be expected to increase very much. So the net effect of an increase of the budget per employee should be an increase of corruption.*

### **3.3.3 Amount of low paid employees**

A high salary increases the certain income of not participating in the gamble and consequently decreases the expected outcome of the gamble as the loss of income if caught increases. As the expected income of participating in the gamble is decreased compared to the certain income when being uncorrupt, a negative correlation between salary and corruption is to be anticipated. *So a greater amount of low paid employees should lead to higher level of corruption.*

### **3.3.4 Certainty of employment**

Just like a high salary a lower risk of losing your job increase your future income when not participating compared to the expected income when participating in the gamble. In other words, *if your employment is uncertain you have less incitement to stay uncorrupt than otherwise.* We measured this variable using our questionnaires.

### **3.3.5 Share of budget consisting of foreign aid**

Ministries relying on foreign aid have more to lose from corruption as these funds can be quickly withdrawn as the scandal at the Ministry of Health shows. The penalty if you, or any of your colleagues, get caught should therefore be perceived as greater the more aid your

ministry gets. As a result the expected income of being corrupt should decrease and *the share of foreign aid should be negatively correlated with the level of corruption.*

### **3.3.6 Amount of conduct governed by clear rules**

Strict rules should decrease the expected income of being corrupt as clear rules make it more apparent when an action is wrong and hence prosecution easier. If it is up to the public officials themselves where the line is drawn the number of chances of being corrupt is expected to increase. At the same time the moral cost is likely to decrease as a lack of rules makes the definition of corruption more subjective. *Public offices where all actions are governed by clear rules are therefore assumed to be less corrupt.* Data on the amount of rules comes from our questionnaires.

### **3.3.7 Level of social trust**

As the level of social trust (trust in people in general) decrease we expect the moral cost of being corrupt to decrease with it. *So the level of general trust is likely to be negatively correlated with the level of corruption.* We measure the level of general trust at the different ministries with the help of our questionnaires.

## **4. PREVIOUS EMPIRICAL STUDIES**

There have been a great number of empirical studies of what causes corruption, both observational and experimental using both panel and case statistics. Most comparative studies compare different countries instead of different ministries, but as our hypotheses hold even at an aggregate level this overview can provide examples relevant to each of our hypotheses.

### **4.1 Number of employees**

There are a number of investigations concerning the relationship between the size of a government and the presence of corruption and their results often contradict each other. La Porta et al performed a cross-sectional investigation of a large number of countries to study this. They find that governments with many employees, measured as public sector employment/total population, were less corrupt (1999, 237ff).

Studying the 50 states of the USA Glaeser and Saks find a positive relationship between the share of the population employed by different level of government and corruption (2006, 1059).

### **4.2 Budget per employee**

Just as with the number of employees, there is no agreement concerning the effects of budget size on corruption. La Porta et al find that government consumption and transfers are negatively correlated with corruption and draws the conclusion that big governments have a higher level of governance than smaller ones (1999, 239).

The results of La Porta et al are in stark contrast to the results of Goel and Nelson who performed an investigation of the 50 states of the USA. Goel and Nelson find that an increase of the total expenditure at state-local level led to an increase of the number of corruption convictions per employee (1996, 114).

### **4.3 Amount of low paid employees**

The salary of government employees is also discussed by La Porta et al and Goel and Nelson and once again they disagree on the effects. La Porta et al find that higher wages (measured as the ratio of wages of central government to GDP per capita (1999, 236)) are positively correlated with corruption, meaning that an increase of wages increases corruption. It is mentioned that this might be an effect of the power of public officials: public employees with power can get high wages and still benefit from being corrupt (ibid, 239). These results are in part supported by a similar study using the same way to calculate wages by Treisman (2000, 42). Even though his regression does produce a negative correlation, Treisman draw the conclusion that there is no clear evidence of such a correlation really existing.

Goel and Nelson on the other hand find that wages (measured as average salary as a fraction of state per capita income (1996, 112)) are negatively correlated with corruption (116).

Azfar and Nelson perform experiments using a scenario where candidates acting as voters elect an attorney general and an executive president under different premises, among other differences in salaries (2003, 472ff). The result of the experiments is that a high wage for the executive had a clear negative effect on the level of corruption (482).

### **4.4 Certainty of employment**

We find no studies where certainty of employment has had a significant correlation with corruption. Rauch and Evans perform a regression analysis using data from ministries and agencies in 35 different less developed countries. They find a negative correlation between a career-variable (consisting of survey data of promotion possibilities and average term of employment) and corruption but these are not significant (2000, 68).

Treisman (2000, 42), using political stability as a proxy for a more secure employment, finds no significant results in his investigation either.



## **4.5 Share of budget consisting of foreign aid**

The relationship between aid and corruption is the cause of much debate. There seem to be a positive relationship even if some dispute this. By using cross-country data Knack (2001) finds a highly significant negative relationship between aid dependency (measured both as aid to Gross National Product (GNP) and aid to government spending) and quality of government (measured as change in International Country Risk Guide (ICRG)) (317). The ICRG is an 18-point scale consisting of three six point scales: corruption in government, bureaucratic quality and the rule of law (315). These results are criticized by Ear (2007) who uses a pooled Times Series Cross-sectional Model to test similar correlations. Ear's method does lead to the same negative relationship but the results are far less significant than the ones Knack presents (Ear 2007, 272). Other studies, such as Gani (2009), confirm this result.

Tavares (2003, 104), also using ICRG, come to the opposite conclusion. The results are significant and robust to various controls. The difference from Knack and the others can be explained by Tavares controlling for causality through a series of complex calculations.

## **4.6 Amount of conduct governed by clear rules**

We did not find many studies concerning this relationship, but the one we found supports our hypothesis. Kumlin and Rothstein (2005, 349) study the Swedish welfare system and the differences between universal services and needs tested services. They state that needs tested services are left to the bureaucrat's discretionary powers and are therefore more likely to be corrupt. They find support for this hypothesis using data from Western Sweden. Even if our investigation is dealing with more than just welfare services the same conclusions should hold in our case as well.

## **4.7 Level of social trust**

There seems to be a consensus that high levels of social trust correspond to low levels of corruption. Bjørnskov (2003, 12) finds strong support for this hypothesis when investigating a sample of European countries. He uses corruption measurements from Transparency International and social trust measurements from the European Value Study.

Bjørnskov's result is confirmed for a larger sample of countries by Rothstein and Eek (2009, 89) who find a fairly high relationship between social trust and the level of corruption. They also use the corruption level from Transparency International but compare them to the level of social trust from the World Value Study.

## 5. EMPIRICAL ANALYSIS

### 5.1 Descriptions of variables and data

Each hypothesis has a corresponding variable besides “number of employees” which has two. Explanations of the variables can be found in table 5.1.

**Table 5.1.** Variables

Variable	Data used
Corruption	The dependent variable. An average of all scores given to a ministry excluding the ones given by that ministry's own officials. The ministry officials' view of their own ministries can be found in Appendix C.
Number of employees	1. Number of total employees, 2. Number of people falling under the headline "General Salary Scale Post" (GSSP), excluding posts like "Medical Doctor Salary Scale Post". The latter might be a more comparable figure as ministries such as Ministry of Health count Medical Doctors as their employees boosting their figure far beyond some of the others. Both figures are from various volumes of "Establishment Register for Ministries and Provinces to support Estimates of Expenditure for the Year 2010" (Public Service Management Division (1-4)).
Budget per employee	Total budget for the Ministry as stated in the "Activity Based Annual Budget" for the year 2010 (Republic of Zambia, 2010) divided by total number of employees. As the total budget includes wages for non-bureaucratic personnel (medical doctors etc.) this is a more fair measurement than if we would have divided the budget over the "General Salary Scale Post"-employees.
Amount of low paid employees	Share of employees falling under the headline "General Salary Scale Post" that fall in the lowest paid division of three (annual wages between 11,441,664 and 12,520,392 kwacha). Average salary data was not available but this measurement gives us a comprehensible figure that tells us something about the salary level of the various ministries. Note that this data is <i>negatively</i> correlated with average salary level; a high share means that average salaries are <i>low</i> .
Certainty of employment	An average of the ministry officials' answer to the question "How certain are you of your employment, that is, how certain are you that you will not lose your job in the close future?". Possible answers range from 1 ("Very uncertain") to 10 ("Very certain").
Share of budget consisting of foreign aid	Share of total budget coming from foreign donors as written in the "Activity Based Annual Budget" for the year 2010 (Republic of Zambia, 2010). This only includes support to specific projects but it is the only aid figures available at ministry level.

Amount of conduct governed by clear rules	An average of the different ministry officials' answer to the question “Would you say that your work is mostly governed by strict rules or left to your own judgment?”. Possible answers range from 1 (“All work is governed by rules”) to 10 (“All work is left to my own judgment”).
Level of social trust	An average of the different ministry officials' answer to the question “To what extent do you believe people in general can be trusted?”. Possible answers range from 1 (“People can’t be trusted at all”) to 10 (“People can be trusted completely”).
Distribution dummy	A dummy variable controlling for whether or not we, the authors, were allowed to distribute and collect the questionnaires ourselves. This is to control if the questionnaires collected by personnel from the ministries differ from the ones we distributed. 1 = questionnaires distributed and collected by ministry personnel, 0 = questionnaire distributed and collected by the authors.

The following regressions are all based on the data found in table 5.2. The data is presented to 2 decimal places. All data on employment is gathered from Public Service Management Division (1) except that for Ministry of Health (Public Service Management Division (2)), Agriculture and Co-operatives (Public Service Management Division (3)) and Education (Public Service Management Division (4)). All data from questionnaires come from the in total 410 questionnaires we gathered from the 21 ministries which were collected in April and May 2010.

In the end of the table the standard deviations of the various variables can be found. As we can see there is variation in all variables which means we can perform a meaningful regression analysis.

**Table 5.2. Data**

Variable:	Corruption	Number of employees (total), (PSMD)	Number of employees ("General Salary Scale Post"), (PSMD)	Budget per employee (kwacha), (Activity Based Annual Budget)	Amount of low paid employees (%)	Certainty of employment	Share of budget consisting of aid (%), (Activity Based Annual Budget)	Amount of conduct governed by clear rules	Level of social trust	Distribution dummy
Energy and Water Development	0.50	228	157	1303863223.00	6	8.36	60	2.41	5.14	0
Mines and Mineral Resources	-0.28	351	264	69757315.87	17	6.56	0	3.04	4.62	0
Home Affairs	-1.58	3 874	679	63979540.82	30	6.40	0	4.60	6.00	1
Foreign Affairs	0.38	488	442	581869276.20	2	8.60	0	3.50	5.15	1
Tourism, Environment and Natural Resources	0.62	375	261	575703379.20	11	8.62	67	4.19	4.81	0
Information and Broadcasting Services	0.17	203	162	156241811.60	7	7.82	0	3,53	4,12	0
Local Government and Housing	-1,09	274	182	1089451732.00	15	9,41	0	4,23	7,64	1
Justice	-0,50	422	332	749912682,80	11	6,52	9	2,95	4,85	0
Commerce, Trade and Industry	0,69	149	123	279132285,80	8	6,12	0	3,96	4,19	1
Finance and National Planning	-0,36	1 540	1 282	627558160,30	26	7,80	10	2,75	6,10	0 <sup>2</sup>
Labor and Social Security	0,37	176	142	102790507.30	11	7,40	0	2,93	4,73	0
Community Development and Social Service	1,02	235	160	325772975.60	11	6,89	8	2,96	3,85	0
Communications and Transport	-0,26	516	448	184060859.30	29	6,88	0	4,00	4,27	0
Works and Supply	-1,18	1 289	842	108600752.70	28	7,90	0	3,38	5,05	0
Science, Technology and Vocational Training	0,80	137	83	813826317,90	12	7,26	0	3,22	4,22	0
Sports, Youth and Child Development	0,81	152	101	206171146,70	12	9,00	0	4,86	5,00	0
Defense	-0,11	188	89	7149366035.00	9	6,27	0	5,09	5,18	1
Lands	-1,59	308	264	112702861,80	22	5,88	0	3,29	5,08	0
Health	-1,71	34 176	4 279	39572888,77	38	8,40	0	2,75	3,90	0
Agriculture and Co-operatives	0,41	7 109	5 753	123124621.50	2	7,15	19	3,24	5,42	0
Education	-0,34	90 082	2 806	36083245.03	17	7,78	10	2,89	4,44	1
Standard deviation	0.85	20481.54	1517.50	1522275385.76	9.86	1.01	18.97	0.74	0.87	

<sup>2</sup> Ministry of Finance and National Planning distributed 6 questionnaires out of 21 by themselves.

## 5.2 Regressions

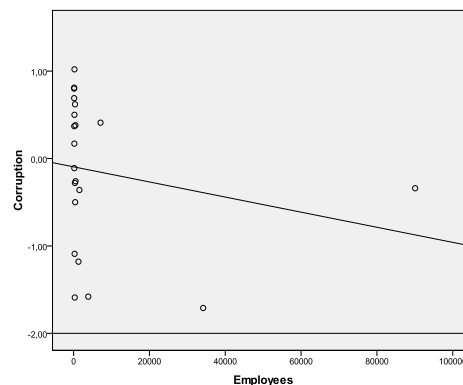
To check for multicollinearity (highly correlated independent variables) we construct a correlation matrix which is presented in Appendix B. As none of the variables has a higher correlation than 0.513 we can draw the conclusion that there is no multicollinearity in our sample.

To get a grasp of which variables are the most important ones we check the correlation between each variable and the dependent variable *Corruption*. The standardized coefficients (Beta), the significance and the respective dot plots can be seen below. Using standardized coefficients is a way of comparing different variables with different scales of unit. This way we can easily compare the coefficients of the different variables even if they are using units as diverse as “kwacha per year” or the average scores of the questions from the questionnaire.

**Table 5.3.** Correlations and dot plots

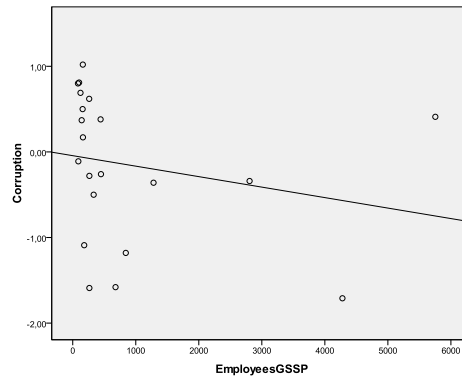
Number of employees

Beta: -0.207(0.368)



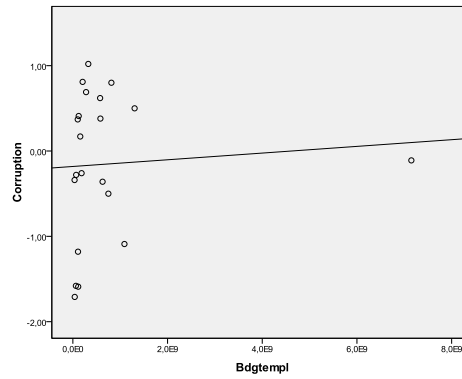
Number of employees (GSSP)

Beta: -0.217 (0.344)



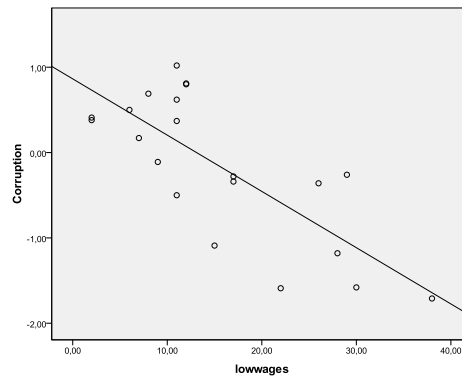
Budget per employee

Beta: 0.070 (0.763)



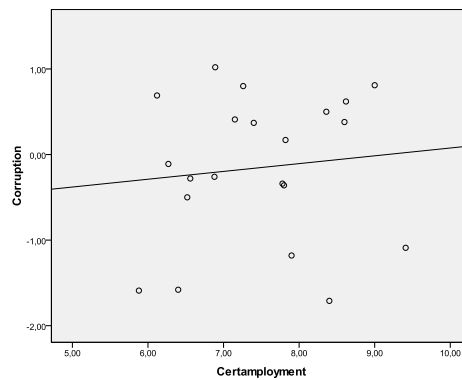
Amount of low wages

Beta: -0.760 (0.000)\*\*\*\*



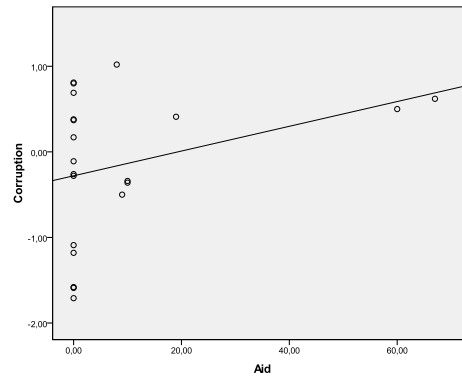
Certainty of employment

Beta: 0.108 (0.642)



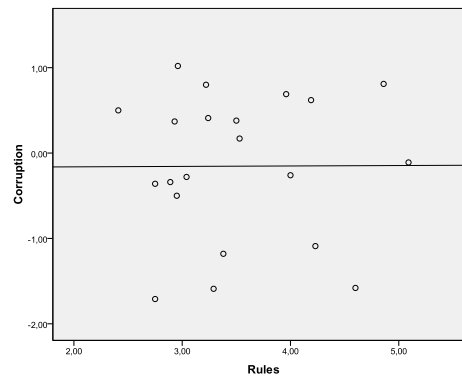
Share of budget consisting of foreign aid

Beta: 0.321 (0.156)



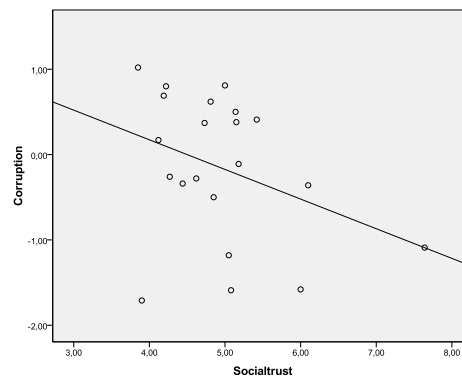
Amount of conduct governed by clear rules

Beta: 0.004 (0.985)



Level of social trust

Beta: -0.353 (0.117)



Dependent variable: Corruption. Number of observations: 21. Significance in parenthesis.

\*Significant at the 10%-level, \*\*Significant at the 5% level, \*\*\*Significant at the 1% level, \*\*\*\*Significant at the 0.1% level

As we can see, the variable *amount of low paid employees* is the by far most statistically significant variable and it has the highest standardized coefficient which means that it has the greatest correlation with the corruption variable. The model  $Corruption = Constant + \beta_1$



*Amount of low paid employees* (Model 1) has a  $R^2$  of 0.578 (table 5.4). The second most significant variable in table 5.3 is social trust followed by aid, but neither is significant in their correlations at the 10% level.

**Table 5.4.** Model 1

Independent variables	Model 1
Constant	(0.002)***
Amount of low paid employees	-0.760 (0.000)****
R	0.760
$R^2$	0.578

Dependent variable: Corruption. Number of observations: 21. Significance in parenthesis.

\*Significant at the 10%-level, \*\*Significant at the 5% level, \*\*\*Significant at the 1% level, \*\*\*\*Significant at the 0.1% level

After Model 1 we ran the regressions  $Corruption = Constant + \beta_1 \text{Amount of low paid employees} + \beta_2 \text{Social Trust}$  and  $Corruption = Constant + \beta_1 \text{Amount of low paid employees} + \beta_2 \text{Social Trust} + \beta_3 \text{Aid}$  (Model 2 and 3 respectively). When dealing with regressions with more than one independent variable we will use the adjusted  $R^2$ -value instead of the unadjusted. The adjusted  $R^2$ -value adjusts for the effect that the unadjusted  $R^2$ -value can be artificially inflated by adding random variables. The adjusted  $R^2$ -value only increases if the added variable improves the model more than a random variable would. This is also a test to see whether or not amount of low paid employees is robust, that is, whether or not it is still significant when respect is taken to other variables. Model 2 and 3 can be seen below.

**Table 5.5.** Models 2 and 3

Independent variables	Model 2	Model 3
Constant	(0.002)***	(0.002)***
Amount of low paid employees	-0.753 (0.000)****	-0.717 (0.000)****
Level of social trust	-0.336 (0.019)**	-0.340 (0.019)**
Share of budget consisting of foreign aid		0.125 (0.375)
R	0.831	0.840
R <sup>2</sup>	0.691	0.705
Adjusted R <sup>2</sup>	0.657	0.654

Dependent variable: Corruption. Number of observations: 21. Significance in parenthesis.

\*Significant at the 10%-level, \*\*Significant at the 5% level, \*\*\*Significant at the 1% level, \*\*\*\*Significant at the 0.1% level

Both models have a higher adjusted R<sup>2</sup>-value than the R<sup>2</sup>-value of Model 1 (as Model 1 only uses one independent variable the adjusted R<sup>2</sup>-value is not applicable), hence these models are able to explain more of the corruption than *amount of low paid employees* can do on its own. *Aid* is still not significant, even less so now than before. Adding the third variable does increase unadjusted R<sup>2</sup> but leaves the adjusted R<sup>2</sup> almost unchanged. In total we can see that adding the variable *Aid* does not increase the explanatory power of Model 2. We can see that *Amount of low paid employees* is robust in both models since it is still significant at the 0.1% level. Social trust is significant at the 5% level in both models which is an improvement from before when it was only significant at the 10% level.

Lastly we ran the complete regression using all variables, Model 4:  $Corruption = Constant + \beta_1 \text{Number of Employees} + \beta_2 \text{Number of employees (GSSP)} + \beta_3 \text{Budget per employee} + \beta_4 \text{Amount of low paid employees} + \beta_5 \text{Certainty of employment} + \beta_6 \text{Aid} + \beta_7 \text{Rules} + \beta_8 \text{Social Trust} + \beta_9 \text{Distribution dummy}$ .

**Table 5.6. Model 4**

Independent variables	Model 4
Constant	(0.336)
Number of employees	-0.052 (0.839)
Number of employees (GSSP)	-0.080 (0.671)
Budget per employee	-0.052 (0.776)
Amount of low paid employees	-0.711 (0.002)***
Certainty of employment	0.162 (0.383)
Share of budget consisting of foreign aid	0.082 (0.646)
Amount of conduct governed by clear rules	0.133 (0.525)
Level of social trust	-0.398 (0.075)*
Distribution dummy	-0.096 (0.709)
R	0.874
R <sup>2</sup>	0.763
Adjusted R <sup>2</sup>	0.570

Dependent variable: Corruption. Number of observations: 21. Significance in parenthesis.

\*Significant at the 10%-level, \*\*Significant at the 5% level, \*\*\*Significant at the 1% level, \*\*\*\*Significant at the 0.1% level

Even after controlling for all other variables *Amount of low paid employees* is still negative and significant, although now only so on the 1% level. *Social trust* is still more significant now than on its own and is significant at the 10% level. The other variables are still very insignificant. As Model 2 only uses significant variables it seems to be preferable to the other models. This model also has the greatest adjusted  $R^2$ -value.

### **5.3 Analysis**

The four models we use are presented side by side below in table 5.7.

**Table 5.7.** Models 1-4

Independent variables	Model 1	Model 2	Model 3	Model 4
Constant	(0.002)***	(0.002)***	(0.002)***	(0.336)
Amount of low paid employees	-0.760 (0.000)*** *	-0.753 (0.000)*** *	-0.717 (0.000)*** *	-0.711 (0.002)***
Level of social trust		-0.336 (0.019)**	-0.340 (0.019)**	-0.398 (0.075)*
Share of budget consisting of foreign aid			0.125 (0.375)	0.082 (0.646)
Number of employees				-0.052 (0.839)
Certainty of employment				0.162 (0.383)
Budget per employee				-0.052 (0.776)
Amount of conduct governed by clear rules				0.133 (0.525)
Number of employees (GSSP)				-0.080 (0.671)
Distribution dummy				-0.096 (0.709)
R	0.760	0.831	0.840	0.874
R <sup>2</sup>	0.578	0.691	0.705	0.763
Adjusted R <sup>2</sup>		0.657	0.654	0.570

Dependent variable: Corruption. Number of observations: 21. Significance in parenthesis.

\*Significant at the 10%-level, \*\*Significant at the 5% level, \*\*\*Significant at the 1% level, \*\*\*\*Significant at the 0.1% level

It seems as if Model 2 is the best model as it only uses significant variables and has the highest adjusted  $R^2$ . It is clear that *amount of low paid employees* and *social trust* are by far the most important of our hypotheses.

The variable *Amount of low paid employees* is negatively correlated to corruption level. It is significant in all four models and produce a higher  $R^2$ -value alone than the adjusted  $R^2$  for the full Model 4. It also has an approximately twice as large a standardized coefficient than *social trust*, which has the second largest, in all three models they are both in. While reviewing the scatter plot for this variable it's also easy to see that the data points are well in line with each other with no real outliers, which further strengthens the result. As the variable refers to the share of employees (GSSP) who fall in the lowest wage level of three a high value of our variable means a *low* wage level in the ministry as a whole.

Our hypothesis states that high salaries are negatively correlated with corruption as the guaranteed income of not participating in the gamble of being corrupt increase; as your wage go up you have more to lose from being corrupt. However, our figures points in the opposite direction. This result might be due to reverse causality, as mentioned by La Porta et al. (1999, p239), since more corrupt ministries are likely to increase their own wages. La Porta et al also find support for this kind of relationship. Another possibility to reverse causality is that a high wage ministry attracts corrupt people or that low wage ministries offer fewer chances to benefit from corrupt behavior (hence decreasing the expected gains of such behavior) or vice versa. If that is the case a low wage level is a proxy for some other difference in organization other than wage which could explain the odd correlation. The results might therefore have been different if we could have had access to the average wage level or other figures instead of the proxy used but no such data was available. It is also possible that the use of perception as a proxy for corruption affects the results here. The theories of Public Choice and Klitgaard deal with corruption directly and not through a proxy which might explain the difference between our hypothesis and our result. Employees with low wages are perhaps seen as less corrupt by officials from other ministries.

There are many issues left to investigate but whatever the reason to the negative correlation our hypothesis is proven incorrect.

*Social trust* is also a clearly relevant variable being significant at the 5% level in two of the three models it's in and at the 10% level in the third. Including it in Model 2 increases the (adjusted)  $R^2$ -value from Model 1 meaning the former can explain a greater part of the corruption level than the latter. The data points in this scatter plot are fairly well behaved here as well, with only one outlier which doesn't likely have any major distorting effect on the end result. The negative correlation is well in line with our hypothesis and previous research, and suggests that not only financial costs are taken into account when deciding whether or not to participate in the corruption gamble, moral costs are also important.

As with *Amount of low wage employees* the fact that we are using a perception proxy might have an effect on the result. Many people might base their view on whether or not a ministry is corrupt at least partially on if they feel that social trust is high within that ministry. So if people perceive a ministry as trusting they might also perceive it as uncorrupt even if this might not be true.

The fairly small effect of social trust on our corruption proxy might be due to the small variation between the ministries, 18 out of 21 ministries fall between the scores 3.85 and 5.42 out of 10. All the Zambian ministries act under the same rules with the same police and culture, so this is no surprise. The research reviewed focus on different countries so the level of social trust in their sample is likely to differ more and hence explain more of the corruption level. If this is taken into consideration the relatively weak significance and smaller standardized coefficient becomes less surprising.

Causality is also an obvious factor here, a person working with people he knows or think is corrupt is less likely to answer that people can be trusted than a person working with trustworthy people. Corruption affects social trust just as social trust affects corruption.

An issue with the measurement of social trust as a variable is our limited sample size. As the data from this variable comes from the answers given to our questionnaires some ministries (especially Ministry of Sports, Youth and Child Development and Ministry of Home Affairs) are represented by only a small number of people. Our aim was to get at least

20 questionnaires answered at each ministry but sometimes this was not possible due to restrictions given to us by the ministries. In other cases we received a large number of blanks or incorrectly filled in questionnaires which also limited the sample.

According to the theoretically based hypothesis the variable *budget per employee* should correlate positively with a higher level of corruption. A larger amount of money being handled by each public servant should give higher benefits of corruption and thus increase it. However our results show no clear signs of correlation, the relationship being positive when the variable is tested by itself and negative when it is run together with the other variables in Model 4. None of the results are significant. Our result does not corroborate with the result provided by the studies reviewed, where both find a relationship. But as one of the studies found a positive correlation (Goel and Nelson) and the other a negative one (La Porta et al), it is clear that this discussion is not yet settled. As discussed in the hypothesis (3.3.2.), this might be due to ministries with a large budget per employee are being more closely watched, increasing the risk of getting caught. The effect of this might offset the increased benefit of a successful corrupt action leaving the expected outcome of being corrupt unchanged.

The lack of correlation between the variable *Share of budget consisting of foreign aid* and corruption level might be the result of a faulty proxy. Our measurement is only based on the aid reported in the Annual Activity Based Budget and this is only part of the aid going to Zambia. These were the only figures available. We were told by officials at the Ministry of Finance and National Planning that more comprehensive figures on ministry level would be available first sometime in the future. These, not yet produced, figures might to a great extent improve this variable, especially since far from all ministries has any aid at all reported in the budget.

There is a vague positive correlation in both the models where *Aid* is part but in neither is it as strong as in the initial test (table 5.3.). This variable is hence not robust as the more variables are controlled for the less significant *Aid* becomes. As discussed earlier, *Aid's* relation to corruption is the cause of some debate. The three studies reviewed (Knack 2001, Tavares 2003 and Ear 2001) all use basically the same data but come to different conclusions



depending which method they use. It is of course also possible that individuals do not take aid into consideration when deciding whether or not to be corrupt leaving the odds of the gamble unchanged and *Aid* uncorrelated with corruption.

Concerning the variable *certainty of employment* we expected in our hypothesis that a lower risk of losing the job should give higher incitements to be uncorrupt since a higher certainty of employment should increase the certainty of a stable income when not being corrupt.

But in the regression we could see a weak positive correlation (Beta 0.108 in table 5.3. and 0.162 in Model 4) between higher certainty of employment and a higher level of corruption. However, just like in the previous studies committed to this issue, the result in our investigation is not statistically significant. A possible reason that it is not significant can be that as the level of certainty of employment increases it may increase so much that the employee gets beyond prosecution, so that being corrupt would be considerably less risky. Even being caught might not make one lose one's job, and will thus cancel out the other effect. To reach a different result it would be possible to measure the certainty with another proxy. Different proxies could in this case be more qualitative questions about job certainty, or to measure the average length of employment. However, that data would probably be very hard and time consuming to get, at least for a country like Zambia where data rarely is easily available. Just as in the *social trust* hypothesis a bigger sample from some of the ministries might also have given a different outcome.

How the *number of employees* would affect corruption is one of the harder hypotheses to predict. We came to the conclusion that the number of employees should show a positive correlation with corruption. This is because even though the cost of being corrupt may increase with more employees, all of the public servants still gain from being corrupt so coordinating the corrupt behavior and not turning each other in may be the most beneficial for each employee. An important thing to observe about this hypothesis is that we have two different variables for the number of employees, one with the total amount of employees and the other with the number of employees that fall under the GSSP category which are the

bureaucrats at the ministry headquarters and departments. Nevertheless, we use the same hypothesis for both measurements.

Our results show a weak negative correlation for both the total amount of employees, and the employees that fall under the GSSP category, but again not a significant one. As we argue above in the hypothesis this might be because that with more employees it's harder to act alone and that these costs outweigh the decreased risk of getting caught.

Another explanation can be that a larger amount of employees leads to more work being left to the officials' own discretion but as both variables are uncorrelated to the *Rules* variable (Appendix B) this does not seem to be the case. Another way to measure this can be to measure the number of officials per employee that actively works with controlling and supervising the public offices. Such a measurement would however require a lot more data.

Our *Distribution dummy* is highly insignificant when correlated to our corruption variable in Model 4. Neither is it correlated with any of the other independent variables (Appendix B). This tells us that the ministries that did not let us do our own distribution did not differ significantly from the ones that did.

*Amount of conduct governed by clear rules* are likely to reduce the anticipated income of being corrupt, as clear rules should make it more obvious when you break them. So where all the work is governed by strict rules it should be less likely for the employees to be corrupt.

However, our results show no correlation or only a very weak positive one between the strictness of rules and the level of corruption, this hypothesis also has the weakest significance level of all the hypotheses. In the older studies we reviewed there is in fact a correlation for a similar hypothesis to ours. As the results were so random that we received such a low significance level, it might have been better to use another method or proxy to find the strictness of rules. One way to receive a different, perhaps more correlated and significant proxy, can again be to use a more qualitative method with extended questions to more specifically find out how strict the rules are. Possible questions could then be about the amount of time they work alone or for example how much of their work will be needed to be supervised or checked by others.

For this variable we also have the same problem as in the social trust and job certainty hypothesis where a bigger sample from certain ministries would have given a more reliable result.

As this analysis has been made on a ministry-level we have a fixed amount of data points, the 21 data points represented by each ministry. The limited amount of data points in our study obviously makes it harder to discern significant correlations for our variables. However, the fact that we still have managed to find significant correlations despite the few data points strengthens those correlations, making them even more trustworthy and interesting.

## 6. DISCUSSION

There is a general consensus that corruption is one of the biggest challenges for LDCs today, a challenge that these countries must overcome to have any real chance at development. The causes of corruption, however, still remain a point of dispute. The lack of conclusive data and the great variation of results indicate that there is a great need for more research. There is especially a need for investigations on a sub-state level. There are surprisingly few of this kind of investigation and future studies at this level is likely to compliment the research of this complex issue, perhaps being able to find correlations that are not visible at the aggregated state level.

Our empirical study finds a strong relationship between the amount of low wage employees in the Zambian ministries and the corruption level in these ministries. However, instead of the predicted negative relationship we find a positive one suggesting that higher wages generates an increased level of corruption. The policy implication of this is quite controversial as this entail that lowering wages in LDC ministries would decrease the level of corruption. But, as discussed above, this correlation might be due to our variable being a proxy for differences in organizational structure since our proxy is based on different groups of employees. The fact that our dependent variable, corruption, is based on perception might further distort the correlation. More research is essential here to find which differences in organization that affects the corruption level. Is low wages a sign of an honest bureaucracy or just a sign of a lack of opportunities to be corrupt? In the case of the latter, how can you deal with projects where such opportunities arise? The topics of future research are many but a good start would be to gather sufficient data to use lag to investigate the causality between the two.

The only other significant relationship we find is the expected negative relationship between corruption level and social trust among the ministries. This relationship is possibly the most accepted in regressions concerning corruption. Sadly, this relationship gives no clear policy implication as social trust is an as complex subject as corruption. The determinants of

social trust require more research themselves. A causality investigation can be interesting here as it is reasonable to assume that this negative relationship runs both ways.

Besides these two correlations, none of our variables are relevant. We have already discussed that this might on some occasions be due to faulty proxies or data.

Considering these sometimes inconclusive results, it is reasonable to start questioning our underlying theoretical model; can Public Choice be used to explain corruption? Even though we can only prove one of our hypotheses right and only one wrong we still believe that economic theory can be very useful in these kinds of investigations and that what is needed are more and new variables. Because even if models such as Klitgaard's are easy to calculate, measuring the true value for its components is not. The total economic cost is hard enough as it in part differs with individual's perceptions of, and attitudes towards, risk and other equally hard to measure factors but the moral cost is even harder. We assume that the moral cost of being corrupt is the same among the different ministries (besides variation caused by differences in level of social trust). By including more variables measuring the moral cost of being corrupt this assumption might be loosened in future research. Examples of such questions might be questions on perceptions of right and wrong, possibly complimented by longer interviews discussing the subject. On top of these problems come the problems of quantifying corruption. Our choice to base this essay on perception might affect some of the results but there are few good alternatives to measuring corruption.

Zambia is just one of many stable democratic LDCs where these kinds of studies can and should be performed in the future. A regression performed on ministries from other countries can see if our results are robust across national borders. A comparison between similar regressions from different countries may also act as a great compliment to state-level investigations. It might also be interesting to incorporate other institutions in this kind of investigations. Similar investigations as this one can be performed both on other government institutions as well as Non-Governmental Organizations (NGO's). The problem is to find organizations that are sufficiently alike so the variables used will represent a large enough part of the difference among the institutions. Considering the great variation within the NGO-

world this might be hard for these types of organizations, but considering the sheer number of NGOs it's not impossible.

In conclusion there are a great number of ways to further improve this area of research; additional variables, changed proxies, new countries and new institutions can greatly improve this type of regressions. There is still a lot to learn about the determinants of corruption from this kind of sub-state regression analysis.

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## **APPENDIX A, Questionnaire**



## Survey questionnaire

This is a study performed as part of a bachelor thesis in economics done for the Department of Economics at Lund University, Sweden. It consists of six questions concerning the level of corruption at government ministries. We are greatly thankful for your help.

**ALL ANSWERS ARE ANONYMOUS**

**If corruption is when a holder of public office motivated by private gain gives preferential treatment that is not officially approved, how corrupt would you say Zambia is in comparison to other countries? Please circle the appropriate number.**

Very corrupt Not corrupt at all

1      2      3      4      5      6      7      8      9      10

**If 0 is the average level of corruption on Zambia, how much more or less corrupt would you say the following ministries are? Please circle the appropriate number. Circle X if you feel that you do not know enough about a ministry to answer.**

	Much more corrupt						Much less corrupt					
	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Agriculture & Cooperatives												
Min. of Commerce, Trade & Industry												
Min. of Communications & Transport												
Min. of Community Development & Social Service												
Min. of Defense												
Min. of Education												
Min. of Energy & Water Development												
Min. of Environment, Natural Resources & Tourism												
Min. of Finance & National Planning												

Min. of Foreign Affairs	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Gender & Women's Development	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Health	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Home Affairs	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Information & Broadcasting	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Justice	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Labor & Social Security	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Lands	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Local Govt. & Housing	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Mines & Mineral Resources	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Presidential Affairs	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Science, Technology & Vocational Training	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Sports, Youth & Child Development	-5	-4	-3	-2	-1	0	1	2	3	4	5	X
Min. of Works and Supply	-5	-4	-3	-2	-1	0	1	2	3	4	5	X

**How certain are you of your employment, that is, how certain are you that you will not lose your job in the close future?**

Very uncertain

Very certain

1          2          3          4          5          6          7          8          9          10

**Would you say that your work is mostly governed by strict rules or left to your own judgment?**

All work is governed by rules

All work is left to my judgment

1          2          3          4          5          6          7          8          9          10

**To what extent do you believe people in general can be trusted?**

People can't be trusted at all

People can be trusted completely

1          2          3          4          5          6          7          8          9          10

**Which of the above Ministries do you work for?**

\_\_\_\_\_

**THANK YOU FOR YOUR TIME!**

## APPENDIX B, Correlation Matrix

	Number of employees	Distribution dummy	Level of social trust	Amount of trust governed by clear rules	Share of budget consisting of foreign aid	Certainty of employment	Amount of low employees	Budget per employee	Employees per employee	Number of employees
Number of employees	0.287	-0.201	-0.266	-0.019	0.129	0.222	-0.144	0.513	1.000	
Distribution dummy	-0.076	-0.041	-0.302	0.030	0.092	0.171	-0.200	1.000		
Level of social trust	0.162	0.162	0.443	0.012	-0.174	-0.232	1.000			
Amount of trust governed by clear rules	0.022	0.022	-0.044	-0.286	-0.065	1.000				
Share of budget consisting of foreign aid	0.308	0.308	-0.006	0.304	1.000					
Certainty of employment	-0.030	-0.030	-0.006	0.304	1.000					
Amount of low employees	0.355	0.355	0.443	0.012	-0.174	-0.232	1.000			
Budget per employee	-0.127	-0.127	-0.044	-0.286	-0.065	1.000				
Employees per employee	0.368	0.368	-0.175	1.000						
Number of employees	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

# APPENDIX C, Self Perception

