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Hungering for Governance
The Role of Quality of Government in Access to Food

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Abstract

Over the last years, political science scholars have increasingly questioned the role of democracy in producing human welfare and public goods provision, as many democracies tend to fail in these aspects. In attempts to track down the causes behind these failures, scholars have lifted the issue of bad governance as a central factor. When investigating how to improve human well being, the political science research community have mostly paid attention to what can be referred to as the *input* side of the political system – namely access to power, while the *output* side of the system – exercise of power, to a large extent has been overlooked. As a consequence, it has been argued that if focus is shifted from representative democracy to measures of Quality of Government (QoG) or state capacity the picture of what politics can do for human well being will change dramatically.

Similar arguments are present also within food security literature, where scholars are increasingly questioning democracy as a determinant of food security and instead turning their attention to strong institutions and the role of governments. The objective of this study is to empirically contribute to the yet mainly theoretical debate on the role of democracy and Quality of Government in human welfare with a food security focus. This is done by examining the role of democracy and QoG, measured as perception of corruption, on access to food. In addition, corruption is challenged as a determinant of food security by more traditional explanation within previous literature.

The results of the study indicate that democracy does not have an effect on access to food, but corruption does. The only competing explanation that proved to play a significant role in access to food was poverty, while factors such as GDP, population and trade did not. Hence, the results of this study suggest that food security is indeed a governance issue – and more specifically a governance *output* issue.

Key words: Quality of government, corruption, democracy, food security, access to food, prevalence of undernourishment.

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Abbreviations

CV	Control variable
CPI	Corruption Perception Index
DV	Dependent variable
FAO	Food and Agriculture Organization of the United Nations
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IV	Independent variable
MDG	Millenium Development Goal
PoU	Prevalence of Undernourishment
QoG	Quality of Government
UN	United Nations
WB	World Bank
WFP	World Food Program

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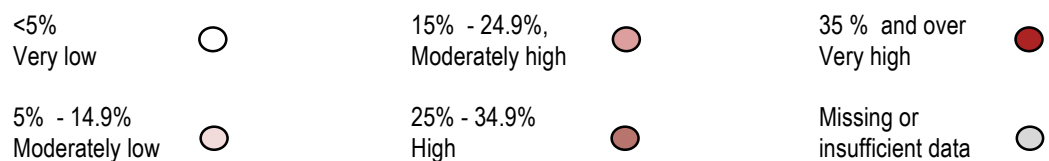
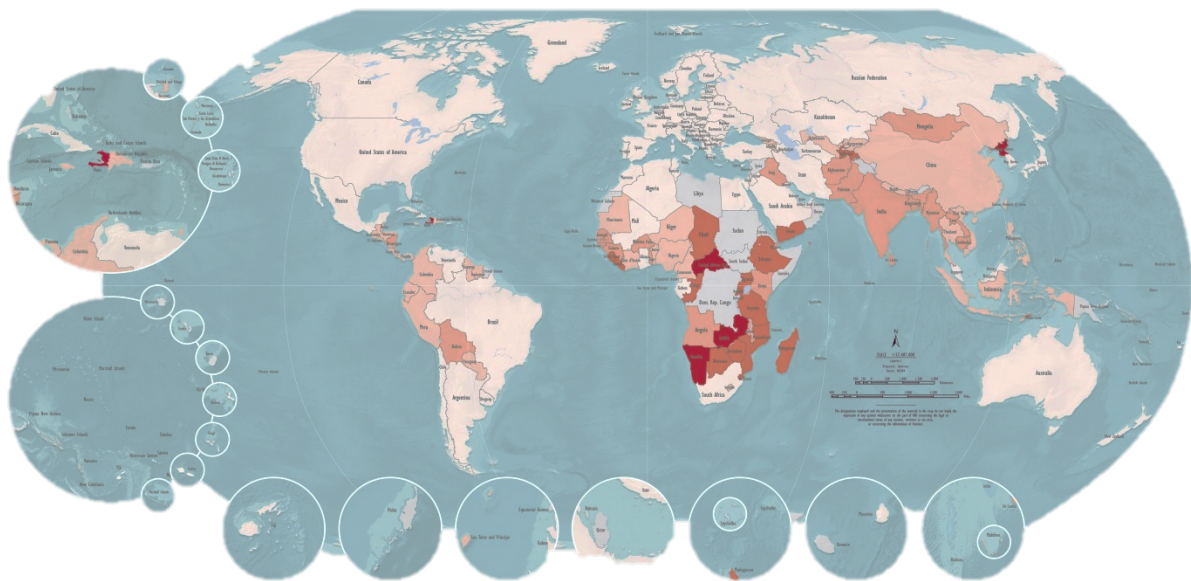
1. Introduction

805 million people suffer from chronic undernourishment and one out of eight people in the world goes to bed hungry at night (FAO, IFAD & WFP 2014).

Although the total number of chronically undernourished people worldwide has fallen by 20 percent since 1990–92, the progress has slowed significantly since the food price and economic crises in 2007–2009 (FAO 2014).

The hunger target of the first Millennium Development Goal (MDG) of halving the proportion of undernourished people in developing countries by 2015 is by some considered within reach (United Nations 2013) and will according to others (Alarcon, Felix & Joehnk, Economist Intelligence Unit 2013) clearly be missed. Either way, food insecurity remains a global tragedy and a threat to a large part of humanity.

FAO Hunger Map 2014. Prevalence of undernourishment in the population (percent) in 2012-2014.



Source: FAO Statistics Division (ESS), FAO Global Administrative Unit Layers (GAUL), ETOPO1 (National Geophysical Data Center), FAO Land and Water Division (NRL) 2014.

Hunger kills more people every year than AIDS, malaria and tuberculosis together (WFP 2014), and people escaping death still suffer serious consequences from not gaining enough energy to live an active and dignified life. Their undernourishment makes it hard, or even impossible, to attend school, work or perform physical activities in their everyday lives. Mothers suffering from constant hunger often give birth to weak and underweight babies and face a greater risk of dying when giving birth. Undernourished children grow slower than healthy children, both physically and mentally, which might hinder their ability to study or work later in life. In addition, chronic hunger breaks down the immune system, making hungry people more vulnerable to diseases (WFP 2014).

Hunger is not only a problem at the individual level, it affects whole societies and states, and by extension the developing world at large, as it imposes a severe economic burden. Economists estimate that every physically and mentally stunted child will lose 5-10 percent in lifetime earnings (United Nations 2014).

The food security situation in the world today is a miserable picture and does not put international hunger reduction efforts, where enormous sums of public funds have been lavished, in a good light (IFPRI 2001:173). In order to meet this global challenge and reverse the recent trends of slow-down, purposeful and coordinated action by national governments and international partners are of crucial importance (United Nations 2013:4, 10, Alarcon, Felix & Joehnk, Economist Intelligence Unit 2013).

The fact that nearly 1 billion people suffer from everyday hungry, despite that the world produce more than enough to feed every single person, has by the United Nations been referred to as 'the greatest scandal of our age'. There is enough food for everyone on this planet and it is argued by many that we do have the tools to put an end to hunger, with the right policies and efforts applied.

As expressed by Josette Sheeran, Executive Director at the World Food Programme¹:

"Ending world hunger is an achievable goal within this generation if the right strategies are adopted."

¹ At the United Nations Summit on the Millennium Development Goals (MDGs) in 2010

In line with the overall recognition of the important role of good governance within development over the last decade, its importance for ensuring food security has been increasingly emphasized both within the academia and among policymakers. The Right to Food team at the Food and Agriculture Organization of the United Nations (FAO) states that the sad story of global food insecurity is quickly told as:

"The problem of undernourishment is structural. A huge socket /.../ are food insecure worldwide – with more in times of crises. There is thus a growing belief of governance as the missing ingredient in the 'standard' response to food insecurity²".

It has, by the United Nations (UN), been established that the global hunger problem is not due to a shortage of food, but rather a lack of access to food by the most undernourished and vulnerable people (United Nations 2014, Maxwell 1996, Haddad et al. 1996). The UN has also emphasized that we need to be looking at hunger from a long-term perspective and not just address the issue when a crisis takes place somewhere in the world (United Nations 2014).

It has been emphasized by the Committee on World Food Security (2012:7), that it is necessary to understand the structural and underlying causes of food insecurity and undernourishment in order to identify and prioritise efforts to promote food security and the right to food for all. Although realising the complexity of food security and hunger, as well as the variation across regions, nations, households and even individuals, it is valuable to examine what factors might have positive effects on hunger reduction. This study attempts to adopt these requests, by focusing on food security in a more chronic form and examining the role of governance as a central factor in food security.

Over the last years, the effects of responsible governments and strong institutions on food security and hunger reduction has gained increased attention within development assistance. Quality of government (QoG) is listed as a central factor in ensuring food security in The State of Food Insecurity in the World 2012 (IFAD, WFP and FAO) and Global Strategic framework for Food Security and Nutrition (Committee on World Food Security 2012). In 2013, corruption was added as an indicator to the Global Food

² The Right To Food Team, FAO 2011

Security Index (Alarcon, Felix & Joehnk, Economist Intelligence Unit 2013) with the motivation that it could contribute with additional information about the capacity of the governance system in ensuring availability of the food supply within countries. One of the key messages by IFAD, WFP and FAO (2012) is that governments need to use additional public resources to provide public goods and services to the hungry. One explanation to the failures of states to reach commitments and goals of food security is, according to their 2012 report, due to weak institutions and a lack of political will to make hunger reduction a priority on the political agenda (IFAD, WFP and FAO 2012:22, Committee on World Food Security 2012:7).

Within research on food security, good governance has been promoted as a central determinant of hunger reduction (Sen 1983 and 1999, Besley and Burgess 2001, Dreze 1995, Burchi 2011, Sacks & Levi 2007). It is, however, less clear what kind of governance that actually matters, and this is a question central to research on human welfare at large.

Lately, a debate has emerged within political science research, where the promotion of democratization and the expected positive effects from it has been increasingly put into doubt, while other aspects of governance has been argued to play a larger role in human welfare and food security (Rothstein 2011, Diamond 2007, Sacks & Levi 2007). Following the cold war, democracy and human rights became dominating principles of a new global order and democracy promotion as a foreign policy goal has over time become increasingly accepted within the international community (Guilhot 2005). Today, democracy has become an international norm with striking universality, embraced by many states, transnational organizations and international networks (McFaul 2004:148). Within development assistance, efforts towards democratization has often been promoted and rewarded both by states and multilateral organizations such as the United Nations and the World Bank (WB) (Brown 2005, Guilhot 2005). Claims emphasizing that democracies perform better than nondemocratic states in terms of producing human welfare and providing public goods for their citizens are now being questioned based on the fact that many democracies fail in these aspects (Rothstein 2011, Diamond 2007).

In attempts to track down the causes behind these failures, scholars have lifted the issue of bad governance as a central factor. An increased realization of the fact that we can't assume that democracies automatically will produce good governance has led to a discussion on different aspects of good governance, where an increased focus on the *exercise* of power among governments, Quality of Government, has been promoted by some scholars. They argue that it is good QoG that produces desirable social outcomes, rather than regime type or level of democratization within countries (Holmberg & Rothstein 2010, Norris 2012).

This debate is present also within the food security research. For quite some time, the dominating theory within this field was that 'democracy prevents famine', but in line with the general discussion on what type of governance that actually matters, critics of democracy promotion have put forward counter-arguments built on the greater importance of good governance, in terms of strong institutions, effective governments and absence of corruption (Plumper and Neumayer 2009, Brass 1986, Rubin 2009) Another group of scholars have moved even further, passed the institutional approach, on to emphasizing the role of political will within hunger reduction (Devereux 2000). While the theoretical arguments of the two camps of governance promoters both within human welfare in general and food security more specifically are many, the empirical evidence is more scarce, which is where this study aims to contribute to the research field of governance and food security. Hence, one motivation for this study is to contribute to the debate on what aspects of governance that produce social welfare with a food security focus. In addition, good governance as a determinant of food security will naturally be tested against other explanations within existing research. The study also includes an attempt to move away from the emergency relief approach, which is heavily dominant within the food security research. The focus will be shifted from starvation and death to more chronic food insecurity in terms of undernourishment.

On a policy level, this study could hopefully contribute to insights on what factors that might have positive effects on hunger reduction in order to get closer to MDG 1 and reach future hunger reduction goals. In addition, it could be valuable for the development assistance community to get further insights on if democracy promotion is truly motivated or if there is a reason to shift focus to other aspects of governance. If more states are to succeed in improving human well-being, and food security in this case, a more precise understanding and knowledge of which institutions that provide

desirable outcomes is required (Rothstein 2014).

Hence, the **aim** of this study is to contribute to the yet mainly theoretical debate on weather democracy or Quality of Government matters for human welfare with a food security focus, by decreasing the existing empirical gap.

The **objective** is to do so by empirically examine the effect of democracy and Quality of Government on access to food.

1.1 Disposition

The study starts of by a theoretical part containing previous research on the role of democracy and Quality of Government in human welfare promotion and provision of public goods. This is followed by existing research on the same issue but within the food security literature.

Based on existing theories and research, the aim and objective of the study is presented and then peeled off into research questions and more specific hypothesis, which are to guide the further development of the study.

Next is a presentation of concepts central to the study, the methodological approach and the operationalization of these concepts.

Furthermore, a statistical analysis is carried out followed by a presentation of the results and an analysis of these. Last but not least follows a concluding remark, aiming to wrap the study up.

2. Previous research and theory

In this section, previous research within the fields of democracy and Quality of Government and human welfare is presented. One field of literature argue that democracy promotes human welfare and provision of public goods. This approach has been criticized by scholars questioning the faith to democracy, and instead promoting the role of Quality of Government. A similar governance debate can be found within the food security literature presented next. Based on this, a theoretical argument is put forward, leading on to the research questions and hypothesis of the study.

2.1 Democracy versus Quality of Government and human welfare

The rise of democracy has resulted in a substantial field of literature, where the main purpose so far has been to examine and explain the causes and barriers of the development of representative democracy in different states.

One question, which has gained surprisingly limited attention, is how democracies actually perform. Questions such as if democracies provide human welfare, and how they influence the lives of their citizens have to a large extent been left unanswered (Rothstein 2014).

An existing perception within the democratization literature is that democracies perform better than nondemocratic states in terms of providing public goods and producing human welfare for their citizens (Acemoglu and Robinson 2012, Vollmer and Ziegler 2009, Harding and Wantchekon 2010:14).

A number of mechanisms are offered to explain why that is, and these can more or less be divided into three categories: *representation*, *accountability* and *selection* (Harding and Wantchekon 2010:14).

According to the first explanation offered, we can expect greater provision of public goods in a democracy than in an autocracy, based on the fact that the people in democracies are likely to have higher preferences for public services and redistribution of resources than populations in autocracies. Therefore, democracies are more responsive to the higher redistributive concerns of the decisive median voter, while in autocracies, these incentives to redistribute are missing (Acemoglu and Robinson 2001, Vollmer and Ziegler 2009). The accountability promoters explain the relationship to exist based on the ability of citizens to hold politicians accountable in terms of elections and therefore they tend to feel obligated to provide a wider range of the population with public goods in order to stay in power. The third category argues that it is competitive elections and participation that matters the most. Lower barriers for politicians to exit and for citizen participation makes the political market more contestable and increases the public goods provision by the government, with rent maximizing ambitions (Baum and Lake 2003).

Although some scholars claim to have found support for the argument that democracy promotes human welfare and the provision of public goods in terms of infrastructure, water, public sanitation, public schooling, life expectancy and infant mortality (Deacon

and Saha 2005, Antonis et al. 2009, Biser and Edwards 2012), the empirical evidence has been referred to as scarce, weak, based on biased samples and open to scientific debate (Ross 2006, Rothstein 2014).

Over the years, the literature promoting democracy in this aspect has been increasingly questioned (Holmberg & Rothstein 2010, Rothstein 2011 & 2014). If these pro-democracy arguments are true, then how come so many of the world's democracies are unable to produce human welfare and provide public goods for their populations?

The 'surprisingly uneven' track record of the performances of democracies is for the most part reflected in large n-studies. Using a set of thirty standard measures of national levels of human well-being and some variables known to be related to human well-being, Holmberg and Rothstein (2010) find only weak, non-existing, or sometimes even negative, correlations between the level of democracy and standard measures of human well-being. The result implies that representative democracy does not seem to be a safe cure against severe poverty, economic inequality, illiteracy, general life-expectancy, high maternal mortality, lack of access to safe water or sanitation. Hence, democracy is only weakly correlated, or even unrelated, to measures of human well-being. These results are in addition confirmed by studies carried out by Norris (2012). As expressed by Besley and Kudamatsu (2006:313):

"In spite of the inexorable march of democracy around the globe, just how democratic institutions affect human well-being is up to debate".

In the literature investigating what is causing dysfunctional democracies, lack of 'good governance' has been identified as a main factor (Diamond 2007, Rothstein 2011 & 2014). According to Diamond, democracy today is haunted by a ghost, and that is bad governance. He refers to bad governance as the type of governance plagued by corruption, favouritism, patronage and abuse of power, favouring the interests of a ruling elite. This type of governance does not improve the lives of the many, as the power holders are stealing, wasting or distributing available resources in an unequal manner (Diamond 2007:119).

This criticism has raised an awareness of the need to discuss the concept of good governance and the different dimensions captured by it. Scholars have increasingly emphasized that democracy cannot be a sufficient criterion of good governance and that a democratic country does not automatically produce good quality of government (Rothstein 2011 & 2014).

It has actually been argued that democracy at times generate low QoG. An example of

this, reflecting the argument made by Diamond, is when the majority of voters in a country support corrupt politicians and discrimination against minority groups (Rothstein 2014). Hence, the provision of public goods is not always conducted in a fair and impartial manner in democracies.

The reasons why democracy does not sufficiently cut it as a definition of QoG are not just theoretical, but also empirical, as no straightforward relationship between democracy and QoG has been established (Rothstein 2011:25).

As a matter of fact, a number of large-n studies have landed in a 'contradictory' relationship between democracy and QoG, where QoG has decreased as democracy has increased (Weyland 1998, Sung 2004). Hence, the relationship between democracy and QoG seem not to be straight, but rather curvilinear (Bäck & Hadenius 2008; Sung 2004). In fact, corruption, appears to be worst in newly democratized countries, while in some authoritarian states, on the other hand, have managed to provide a somewhat impartial bureaucracy and keeping corruption levels low (McMillian and Zoido 2004, Root 1996).

Over the years, an extensive literature on the importance of QoG has emerged, examining its effects on a great variation of outcomes. Part of the literature has paid interest to the link between QoG and social well being, including indicators such as poverty, economic inequality, solid social insurance systems and food security of households (Rothstein 2011:47-49, Sacks & Levi 2007).

Various measures of QoG and state capacity have proven to have strong effects on almost all standard measures of human well being (Norris 2012, Holmberg and Rothstein 2010).

QoG indicators such as rule of law, control of corruption and government effectiveness have in a number of initial correlation and regression analysis proven to have positive effects on social outcomes, such as population health and social policy outcomes (Rothstein 2011:43-44, 47). In addition, research show that corruption affects economic and governance factors, such as lower quality of infrastructure and poor targeting of social programs (Chetwynd, Chetwynd and Spector 2003).

This study aims at providing the discussion on the role of democracy versus the role of QoG on human welfare with empirical evidence, by investigating the outcome in terms of food security, which is a rather unexplored aspect of human welfare within this debate.

2.2 Democracy versus Quality of Government and food security

Within the governance and food security literature three theoretical perspectives are dominant; the democracy argument, the institutional approach and the promotion of the role of political will.

Within the theory, and in particular literature focusing on famine prevention, democracy has been central when investigating the role of governance on different food insecurity outcomes. A dominating theory within this field has been the one provided by Amartya Sen (1983, 1999) whose well-known argument 'democracy prevents famine' laid the foundation for a rather comprehensive academic discussion on the effects of democracy on famines, which has come to dominate the literature on the role of the state in food security up until this day (Bardhan 1999, Banik 2007, Osmani 2007).

Sen argues that sound democracies are characterized by specific features preventing famines from occurring. He motivates his argument by emphasizing the role of competition within politics, elections and a free media (Sen 1983, 1999). To prove his point he points to famines taking place in the authoritarian states of North Korea and Sudan. Also, a great famine took place in the autocratic China but not in the democratic India in the end of the 50's and beginning of the 60's, although China was much stronger than India economically. China's failure to prevent the famine, was according to Sen, due to the absence of opposition parties in parliament, multiparty elections and a free press, which allowed for ineffective governmental policies to remain in place despite the obvious failures reflected in the millions of life lost. According to the theory of Sen, famines are not hard to prevent if there is a serious effort by a democratic government, faced by, elections, critical opposition parties and independent newspapers (Sen 1983, 1999).

As evident, the mechanisms provided by the 'democracy prevents famine' argument fits well into the three categories of representation, accountability and selection offered by the literature on democracy and public goods provision.

Sen's argument has been put to the test by a large field of research within food security. Some scholars argue that both cross-country and single country evidence before and after a change in the political system, have provided support for the argument (Sen 1999, Besley and Burgess 2001, Dreze 1995).

Others whom have investigated the argument empirically have found that democracy as a key determinant in preventing famines needs to be questioned both in terms of definitions, estimates and empirical evidence, as well as the causal mechanisms that might underpin the relationship (Burchi 2011, Plumper and Neumayer 2009, Brass 1986, Rubin 2009). This more critical literature has helped to widen the debate by approaching democracy in a more reserved manner and by providing a theoretical base for identifying possible explanations to why fairly democratic countries have not always been able to prevent famines (Burchi 2011).

Some opponents have taken the criticism even further by claiming that democratic states might actually be less motivated to respond to famine crises than authoritarian states, due to the possibility to pass on the responsibility to other players within the political system (Brass 1986, Rubin 2009 and Plumper and Neumayer 2009).

This field of critics have provided important insights to the food security literature motivating a need to look passed democracy and rather focus on institutional arrangements within regimes, which is well in line with the general democracy versus QoG debate, where scholars have emphasized the importance to move away from a democracy focus when investigating what produced desirable social outcomes (Rothstein 2011).

Contributing to a step towards institutional arrangements, Burchi does not just test the validity of Sen's argument, but investigates if governance might play a larger role than democracy in famine prevention. He examines if the possible effect of institutions actually might replace the effect of democracy, or if the two are interrelated (Burchi 2011:18). By including the quality of institutions and governance in the analysis, Burchi argues that both formal and informal institutions could be important factors in tackling famines (Burchi 2011:17).

The theory is put to the test through an econometric analysis covering a large number of emerging and developing countries, providing empirical support for Sen's claim that democracy does prevent famine, but also calling for deeper analysis of the quality of institutions. As democracy turned out to have a significant negative effect on famine mortality, so did 'government effectiveness' and 'control of corruption' (Burchi 2011:28). The conclusion states that the capacity of the government and the bureaucracy in making decisions and implementing those, the policy climate and a range of other governance features are central to famine prevention.

In addition, two samples are created, one democratic and one autocratic and the results indicated that an enlightened authoritarian government with a certain degree, but not democratic, political institutions can prevent famines (Burchi 2011:28). This provides support for the critics of the democracy prevents famine argument, who have claimed that autocracies in some cases prevent famine to a larger extent than democracies.

Similar findings are presented by Sacks and Levi, who investigates to what extent governments are effective or not by looking at social welfare in terms of household food security. They argue that an effective government should be able to deliver necessary goods to their citizens for them to enjoy social welfare (Sacks and Levi 2010:1).

The authors emphasise the role of a reliable bureaucracy, competent law enforcement and infrastructure development in order to ensure adequate provision of food.

The arguments underpinning the study of Sacks and Levi is that poor roads lead to slow and costly transportation, which can cause serious inconvenience for government and aid agencies aiming to deliver food aid during crises.

In addition, weak bureaucracies can hinder the ability of these agencies to properly identify areas and people in need of aid. A poor bureaucracy can also keep farmers from accessing necessary loans in order to buy farming equipment, jeopardizing their food security.

Although, some of the variation in food security seem to be a result of socio-demographic variables, such as household wealth, physical health, age and residence, the findings suggest that a government can either help or hinder citizens from attaining food security by providing or not providing necessary public goods.

According to their results, institutions in terms of rule of law, bureaucratic enforcement and infrastructure development does affect food security (Sacks and Levi 2010:16).

The statement that governments can either help or hinder citizens from attaining food security, made by Sacks and Levi, is bordering on a field of literature, which moves past the institutional approach and view famines as a political phenomena, emphasising the role of political will in food security (De Waal 1990, Devereux 2000).

One of the main scholars within this field, Devereux, is of the firm understanding that if we are to completely eradicate famine and undernourishment during the 21st century,

it does not only require technical capacity in terms of food production and distribution – substantially what is required is more political will at national and international levels than what has been evident to date (Devereux 2000:1).

Devereux is critical to addressing famines as purely institutional, organisational and policy failures. While agreeing that ‘famine-prone countries’ in general have poorly performing economies and weak institutions, and without denying that poverty is a central precondition for undernutrition and famine, the explanation is not sufficient. The political aspect of famines is excluded from these analyses, which, according to Devereux, impersonalises and depoliticises the phenomenon (Devereux 2000:24). He states that famines are always political and that they take place because they are not prevented, but allowed to happen (Devereux 2000:27).

Food crises do not happen over night; in most cases they have a gestation period of months and years, which motivates analysis on failures of response and public action. Although lack of government response can be due to a number of factors, such as inadequate information, weak and inefficient bureaucracy, lack of capacity to respond and act quick and effectively, but according to this camp of scholars lack of political will to act needs to be included in the equation (Devereux 2000:27).

As evident, solid research and interesting results within this field of literature has been provided. However, Burchi’s food security focus is on famines, in line with much of the literature on food security. This study fills both a theoretical and empirical gap by focusing on undernourishment as a more chronic form of food insecurity, which to a large extent is absent in previous research.

Sacks and Levi is an exception of this, as their outcome variable is access to food. Their study, however, is limited to Sub-Saharan Africa and does only include 16 countries. This study, thereby, hope to contribute to the research field with a global approach to food insecurity by including all developing countries in the analysis. To my knowledge, no large-n study with this particular focus has been carried out until this day.

Not everyone would agree that food insecurity fore a most is a governance issue. More traditional competing explanations in previous literature, among others, include population, trade, poverty, infrastructure and political stability. The arguments behind these possible determinants of food security will briefly be elaborated in the empirical section of this study. Therefore, the role of governance as a determinant of food security will also be examined against these other explanations from previous

literature.

2.3 The output of governance

When investigating how to improve human well being, the political science research community have mostly paid attention to one part of the political system – namely access to power, while the other part of the system – exercise of power, to a large extent has been overlooked (Rothstein 2013:12:5-6).

According to Rothstein, we need to distinguish between the *input* and the *output* side of governance. The input side, relating to access to public authority, include the right to run for office, election rules, the formation of cabinets and financing of parties. The output side, on the other hand, refers to the way political authority is conducted and the quality of how the state is capable of governing the society.

He argues that if political scientists shift focus from representative democracy to measures of Quality of Government or state capacity the picture of what politics can do for human well-being will change dramatically (Rothstein 2013:12:3-4).

Providing valuable input to the literature on democracy, QoG and public goods provision is Harding and Wanchekon (2010), when highlighting the limitations of democracy in human welfare promotion. They argue that democratic institutions can pave the way for human welfare and public goods provision, but the outcome is not guaranteed. These arguments are in line with the ones of Rothstein and do further motivate a shift of focus from the input to the output side of governance.

Joining in on the Diamond argument that democracy might be undermined by the ghosts of bad governance, Harding and Wanchekon takes the analysis one step further by providing possible answers to why that is, providing a theory on *mechanisms* central to the discussion on the input versus the output side of governance.

They put forward central mechanisms by which democracy is expected to affect human welfare and argue that these mechanisms are necessary for democracy to actually have an impact on human welfare because if they are not in place, the effect will most likely vanish. This argument underpins both the motivation to test the relationship between democracy and human welfare as well as the development of the theoretical argument of this study.

According to their work, the opportunities for human welfare development provided

by democracy might very well be undermined by clientism and corruption if accountability structures are missing. Hence, democratic institutions generate incentives for power holders to provide public goods, but if the accountability mechanisms are not utilized by the people, politicians can instead react to electoral incentives by engaging in clientism and providing private rather than public goods (Harding and Wanchekon 2010).

The ability for citizens to demand accountability is, according to the writers and other scholars promoting this argument, dependent on factors such as *information*, and *participation*. Citizens need information on the performance of officials in order to be able to effectively hold political elites accountable. In addition, information facilitates participation, which has also proven to have a positive effect on public goods provision and human development (Harding and Wanchekon 2010).

These arguments are of particular interest to this study due to the fact that the majority of undernourished people in the world are populations in rural areas, and in particular women. Access to information in rural areas is in general lower than in urban areas and the ability to participate in the political life is lower when living in rural areas, far from the cities where much of the political discourse takes place. Both information and participation is harder for women to access, due to power structures in the society and everyday discrimination based on gender.

In addition, this study argues that a central factor that needs to be included in this argumentation is the issue of *capacity*. In order to hold politicians and officials accountable, the citizens need the capacity to do so. Even if there is information available, it is useless if the person cannot read. Even if there are societal and political meetings open to the public, they are useless if a person feels unable to fully participate due to lack of education and knowledge.

Capacity is a factor of particular importance to take into account when discussing issues such as undernourishment. Undernourishment makes people weak and sick, unable to carry out the most basic tasks in their everyday life.

If you are too weak to work or to attend school, how will you collect the strength to hold your politicians accountable?

Information, participation and capacity are not factors that are in any way included in this analysis, but the arguments of their importance within democracies motivates a focus on the output side of governance and are central to the theoretical argument of

this thesis, claiming that there indeed are reasons to question the role of democracy in food security and instead turn the focus to the role of Quality of Government. Hence, an ambition with this thesis is to contribute to the debate on whether democracy or QoG promotes food security focus, by focusing on the *output* side of governance.

In addition, by the choice of QoG variable, there is an effort to get closer to the theory on the role of political will in food security. This study is not including political will in the analysis per se and does not intend to argue that Corruption Perception Index (CPI) is a measure of political will. However, by choosing to investigate the output side of governance by measuring the level of corruption, it is an attempt to get closer to, and contribute to the debate on the role of responsiveness to food insecurity among governments, politicians and officials. So, if governmental power is exercised in a corrupt manner, this could give us an indication of a lack of political will to improve access to food for a population, or certain parts of a population. As accurately put by Sacks and Levi, governments can either help or hinder citizens from attaining food security by providing or not providing necessary public goods (Sacks & Levi 2007).

2. 4 Research questions

Does Quality of Government affect access to food?

Does Quality of Government play a larger role in ensuring access to food than democracy?

Based on previous research and the theoretical argument, three hypotheses have been developed in order to more strictly guide the study. It is expected that quality of Government will affect access to food (H1) and that it will do so to a larger extent than democracy (H2). Democracy might have a certain effect on access to food, but that effect will most likely disappear once QoG is added to the analysis (H3).

3. Data and methods

In this chapter the methodological approach is laid out, accompanied by the elaboration, definition and operationalization of central concepts to the study.

3.1 Central concepts

Food security and hunger

As evident, the majority of the literature on food security is centred on famines, an extreme outcome of food insecurity often associated with emergencies, starvation and death (Devereux 2000).

There is now a call for research on food security and famine to move away from the 'emergency relief approach' in order to detect the underlying conditions, making shortages of food endemic (United Nations 2014). The focus needs to shift from acute starvation and dramatic increase of mortality to sustained deprivation of nourishment on a constant level (Baro and Deubel 2006:521).

This is motivated by the fact that more than 805 million people around our globe are food insecure today and only a rather small part of these die as a result of famines (FAO, IFAD & WFP 2014). As a matter of fact, most food insecurity in the world is chronic, as only 8 percent of deaths caused by hunger in 2004 were a consequence of humanitarian emergencies, while 92 percent were regrettable outcomes of chronic hunger and malnutrition (Barrett 2010:827). Hence, this thesis intends to take on a more chronic approach to food security, caused by structural factors, and in this case QoG. This might be further motivated when looking at the role of regime types versus QoG as there is quite a large step between authoritarian regimes letting their populations die and democratic regimes lacking QoG to decrease the undernourishment among its population, and those variances in between might be increasingly captured by a less emergency embossed approach.

The terminology used to refer to different dimensions of food security and hunger can be confusing.

The most generally recognized definition of food security was agreed upon at the 1996 World Food Summit, where it was established that:

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Committee of World Food Security 2012).

The concept of food security rest on four pillars, which include: *availability, access, utilization* and *stability*. The pillars represent different dimensions of food security and are measured by various different indicators. Both within the academic literature and among international organizations specializing in food security, there seem to be differing opinions on what sorts under the different pillars. This is not very surprising however, since there are no clear lines between the various dimensions of food security, which in many aspects are overlapping (Committee of World Food Security 2012).

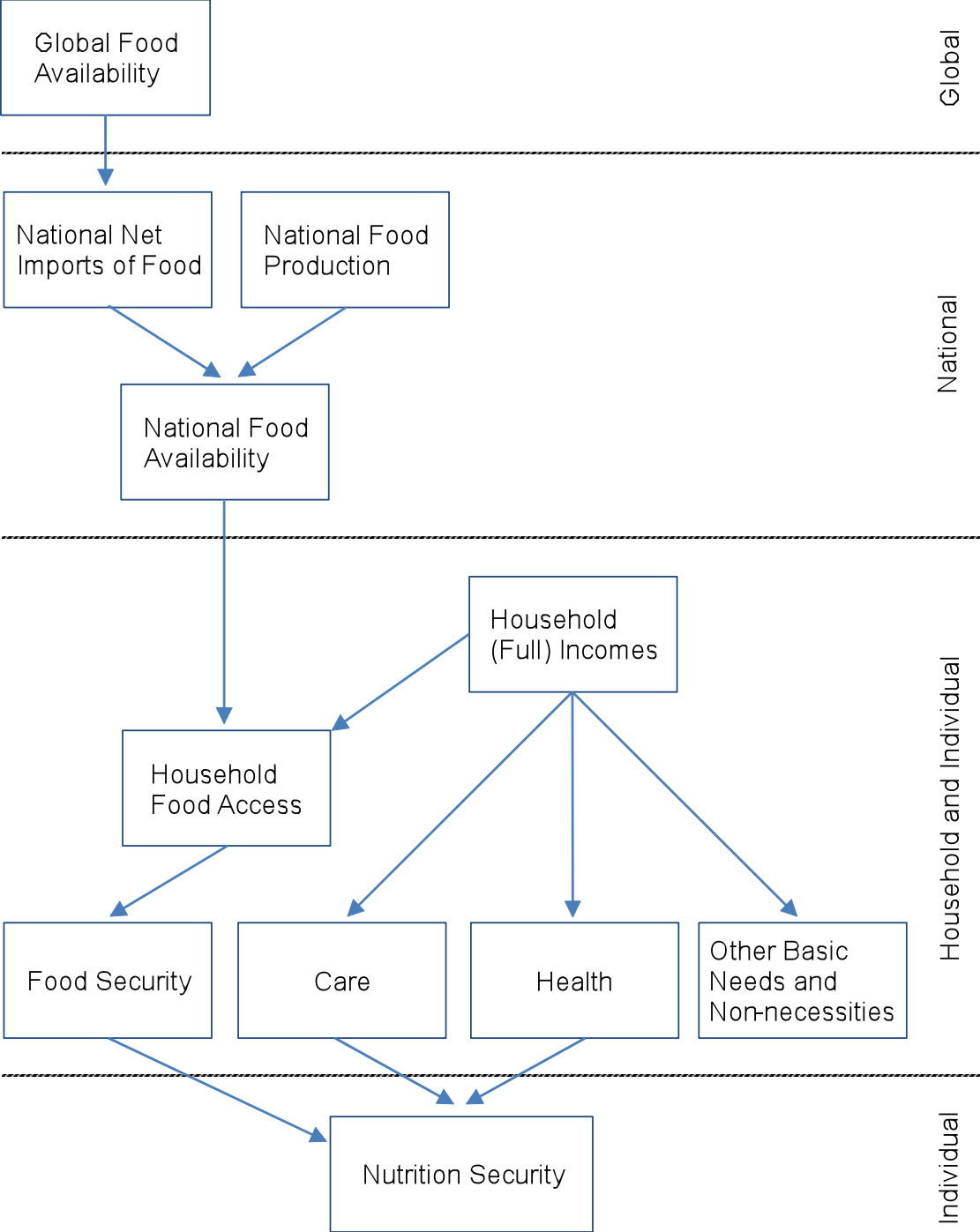
For quite some time the dominating focus within food security was on the dimension of *food availability* in terms of adequate production at the global and national level (Clover 2003:7). This perspective was, however, challenged by Amartya Sen in the 1980's, who came to switch the focus towards the issues of inadequate *access to food*. He argued that starvation can occur even though a country is food secure on the national level due to the population's lack of ability to acquire food. He introduced the perspective of inequality within food security by acknowledging the differences between different social groups and pressing the fact that vulnerable groups starve when they don't have access to enough food, often despite the availability of food for other groups who can afford it (Sen 1981 & Baro & Deubel 2006:523).

“Starvation is a matter of some people not having enough food to eat and not a matter of there being not enough food to eat”, he has stated (1981:434).

This claim has been confirmed in a range of recent studies (Kennedy and Haddad 1992, Sen 1981), establishing that widespread hunger is common even countries producing surplus food for export (Diskin 1995:23). Food security today is mainly an issue of access to food, which will be the focus of this study.

Access to food, and in particular discrepancies between food availability and food access, could be of specific interest when investigating the role of QoG in food security, as this relates to failures in distribution of food to certain parts of the population.

Figure 1. Conceptual framework for food security



Source: UNICEF (1990) and Frankenberger *et al.* (1997)

Access to food is by the FAO defined as: “*Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources)*” (FAO 2006). Food access consists of three elements: *Physical* access, *economic* access and *socio-cultural* access.

Limited physical access to food can exist if food production is high in one part of a country, but can't be delivered to another part suffering from food shortages due to ineffective or lacking infrastructure. Within the economic dimension food insecurity might exist when people can't afford to buy a sufficient amount of food. Although food might be available, the people do not have enough financial resources to purchase it. Socio-cultural aspects do also affect people's access to food. Even if the food is physically available and the people have money to purchase it, they might be prevented from doing so due to the fact that they belong to “the wrong” social group or because they are women for example.

Not seldom, only access within an economic or financial context is taken into account, especially since the start of food price volatility in 2008, while the socio-cultural aspect has tended to end up in the background (Napoli 2010). This study, however, relates to all three forms of food access, as governments could be expected to play a role in each of these categories.

Quality of Government

Although Quality of Government is widely used by academics as well as practitioners and included in a range of empirical indices, the conceptualisation of the term is not very precise. The definition central to this study is offered by Rothstein and Teorell (2008) who describe QoG as a concept of how a state succeeds in utilizing its' resources for the public good. In addition to the quality of the output, meaning delivery of services to its citizenry, the definition also includes that the services are exercised in an efficient and non-corrupt way.

3.2 Operationalization of the dependent variable

Inadequate access to food is by FAO measured by a number of indicators, one of them being 'Prevalence of Undernourishment' (PoU). This particular indicator is the official measure for monitoring progress towards MDG1, as FAO at the 1996 World Food Summit, received the mandate for this very task.

PoU is by FAO defined as: *"the consumption of fewer than about 1,800 kilocalories a day - the minimum that most people require to live a healthy and productive life"* (Von Grebmer 2013).

The PoU indicator is based on data from both food balance sheets, which provide essential information about the food system of a country, and household surveys, which are analyzed to create food security statistics at both national and sub-national levels (FAO 2014). PoU does not capture the impact of short-term economic shocks (FAO, IFAD & WFP 2013). The indicator presents prevalence of undernourishment as percentage of the population being undernourished. The years included in this analysis are 2010-2012.

3.3 Operationalization of the independent variables

Democracy is measured by Democracy Imputed Polity provided by Freedom House. The scale ranges from 0-10, 0 being least democratic and 10 most democratic. Average of Freedom House (fh_pr and fh_cl) is transformed to a 0-10 scale and Polity (p_polity2) is transformed to a scale of 0-10. These two variables are then averaged into fh_polity2. The years included in the analysis are 2009-2011.

Quality of Government can be measured by various indicators, and this study will focus on corruption, and more precisely the perception of corruption. The indicator of choice is the Corruption Perception Index (CPI) offered by Transparency International (TI). The measure includes corruption in the public sector, and corruption involving public officials, politicians and civil servants.

It is based on questions relating to: *"The abuse of public power and focus on: bribery of public officials, kickbacks in public procurement, embezzlement of public funds, and on questions that probe the strength and effectiveness of anti-corruption efforts in the public*

sector. As such, it covers both the administrative and political aspects of corruption” (Transparency International 2014). The indicator ranges between 10 (highly clean) and 0 (highly corrupt), and the years included in the analysis are 2007-2011.

Using CPI as a measure of QoG should not be misinterpreted as stating that QoG should be defined only as the absence of corruption, as QoG is a broader term encompassing more aspects of governance. However, absence of corruption can be considered a crucial part of good quality of government and a suitable measure for this study.

3.4 Operationalization of the control variables

The indicator used to measure GDP is the GDP per capita, PPP (constant international \$) indicator from the World Bank. The year covered is 2009.

Trade freedom is derived from Heritage Foundation and overall quality of infrastructure is provided by World Economic Forum. Population, political stability and poverty are all indicators from the World Bank. Poverty is measured as population below \$1,25 a day (%).

The availability of sound and reliable data, covering as many countries as possible in order to offer possibilities of cross-country comparisons have guided the choices of all the indicators above. All indicators included are derived from solid sources, such as the World Bank, FAO and similar International Organizations.

All the IVs and CVs are derived from the Quality of Government Cross-sectional Standard Dataset 2013 (Quality of Government Institute 2014). The dependent variable (DV) was collected from the FAO Statistics Division FAOSTATS (FAOSTATS 2014).

3.5 Methodological approach

This study is explanatory in the sense that the aim is to investigate if the variance in undernourishment can be explained by the level of democracy or the level of corruption in a country.

With inspiration from the debate on whether democracy or QoG provides human welfare and provide public goods, the aim is to test these theories from a food security perspective, based on existing food security literature. Hence, this is a theory testing study where a deductive approach is applied in order to investigate the relationship between different dimensions of governance and access to food.

The ambition is not to investigate a development over time, but rather to offer a comparison between countries in order to answer the research questions central to the study. The study intend to analyse the role of governance in terms of democracy and QoG, as structural underlying causes in food security, rather than to capture dynamic change, crises or shocks. Based on this, a cross-sectional analysis will be carried out, as time-series data is more sensitive to short-run factors (Feng 2005). The method of cross-sectional analysis has over the years been used by a range of scholars within boarding fields of research, indicating that it is an established research method (Feng 2005)

The hypotheses are tested by carrying out a large-n study, where the units of analysis include all developing countries in the world (see Appendix 1 for full list of countries), with exceptions of missing data and countries with PoU values under five percent. These countries have been excluded from the analysis, based on the fact that FAO only provides a lumped number of PoU for all countries with values under five percent, which is presented as <5% (meaning anything between 1 to 4%), whereas all countries with values above 5% are presented as the exact percentage of the population, making it complicated to include the 'below five countries' in the analysis.

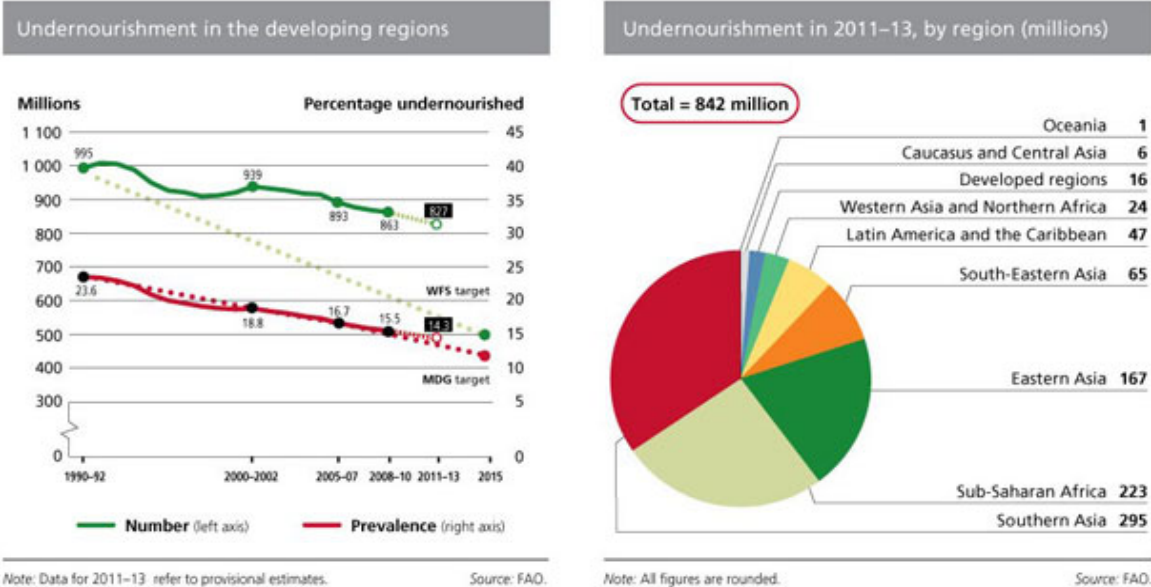
A valid question to ask is if the results would have turned out differently if these countries were included in the analysis and perhaps coded as 2,5% and maybe they would slightly, but since the main interest of this study is to investigate what effects access to food in the development world, countries which does not face a severe challenge of undernourishment are not the countries of greatest interest (after all, 0-5% is quite a low value). Naturally the number of cases dropped slightly, but considering the number of observations included in the analysis after all, this did not cause any greater implications.

The statistical method applied is regression analysis, which is a useful method in order to answer the research questions of this study in the sense that we can establish a possible linear relationship between two or more variables. In addition it offers the opportunity to predict values of the dependent variable (DV) based on values on the independent variables (IVs) included in the analysis (Field 2009:198). Unlike correlation analysis, it is then possible to predict the level of undernourishment based on the level of democracy or corruption, in this case. Knowledge of this kind could be valuable when working towards set goals, such as the MDGs for example.

Although a few similar studies have been carried out, to my knowledge, no large-n

studies have been conducted. Also, the main focus within previous research has been on Sub-Saharan Africa, and although that is a region suffering hard from food insecurity, and in particular famines, insufficient access to food is a global challenge affecting many regions, motivating a global approach.

Figure 2. Undernourishment in the developing regions and undernourishment by region.



Source: FAO Statistics Division (ESS), FAO Global Administrative Unit Layers (GAUL), ETOPO1 (National Geophysical Data Center), FAO Land and Water Division (NRL) 2011-2013.

The cross-section year in the dataset used for the independent variables and control variables (CVs) is 2002 to 2009 (or the closest year available). The data for the dependent variable covers 2010-2012.

In an attempt to approach the issue of reversed causality, the variables have been lagged in the sense that there are at least one year and at the most ten years between the IVs and the DV. One could argue that one year is not sufficient in order to detect the effect of corruption or democracy on undernourishment, since changes in corruption or democracy, and the possible effects of those changes, does not happen over night. However, a -1 year method of lagging is quite common within social science research (Bäck and Hadenius 2008). In addition, in ten years we could possibly expect some kind of change. It should also be underlined that this is not an effort completely rule out reversed causality, but rather to approach the issue and try to lower the risk. A

further discussion on reversed causality is provided in the chapter on strengths and weaknesses of the analysis further ahead.

The empirical analysis will be carried out in three main regression models. The first and main one is a multivariate regression aiming to explore the effect of democracy on undernourishment as well as the effect of corruption on undernourishment, while controlling for GDP.

In a second model, the above mentioned relationships will be further explored in a multivariate regression model with an interaction term.

In a third and last model, additional control variables will be included in a multivariate regression to challenge corruption as an explanatory factor of undernourishment.

These variables have been picked out based on the fact that they have been put forward as possible explanations to undernourishment within previous research.

All the statistical analysis has been carried out in SPSS.

4. Empirical findings and analysis

In the following chapter, the results of the main statistical analysis, exploring the relationship between democracy, QoG and undernourishment, including diagnostic statistics of the model will be presented. This is followed by further investigation of the relationship, as well as competing explanations of what effects undernourishment. At last, a discussion of the strengths and weaknesses of the overall data and analysis will take place.

Initially, a bivariate regression, is carried out in order to investigate the relationship between democracy and prevalence of undernourishment. The choice to commence the analysis by including democracy as the first independent variable is based on the overall theoretical arguments of this study. Although the main relationship of interest is the one between corruption and undernourishment, based on the theoretical arguments within the literature on the importance of democracy for food security, it makes sense to first examine the role of democracy on its own and then move on to corruption.

Formula for the main relationship to be explored:

$$\text{PoU} = \mathbf{b}_0 + \mathbf{b}_1 \text{Dem} + \mathbf{b}_2 \text{CPI} + \mathbf{b}_3 \text{GDP} + \mathbf{e}$$

As evident in *model 1* in the regression table below, the effect of democracy on PoU is not significant, so, no relationship can be established.

In *model 2*, the variable CPI is added to the multivariate analysis. The effect of corruption on PoU proves negative and significant with a b-coefficient of $-.092$. Keeping in mind the reversed scale of CPI (0 being highly corrupt and 10 being highly clean), this suggests that the higher level of perceived corruption in a country, the higher prevalence of undernourishment. The b-coefficient of $-.092$ indicates that one unit change in the independent variable, results in a $-.092$ change in the dependent variable. In this case, if a country becomes “one step” less corrupt on the CPI scale (say, a move from 3 to 4), the prevalence of undernourishment drops by $.092\%$.

This may not seem like a big change, but it is important to remember that the PoU scale ranges from 0-100% of the population being undernourished. Whereas no countries have a 100% undernourished population, the mean value for the developing countries in 2010-2010 was $14,7\%$ of the population. Hence, if a country moves from being highly corrupt (1) to highly clean (10), the prevalence of undernourishment in that country drops by nearly 1%. In a country with 15% PoU, that would mean a decrease to approximately 14% . The adjusted R-square value is $.128$, meaning that nearly 13% of the variance in the dependent variable can be explained by the independent variable. In other words, 13% of PoU can be explained by CPI.

At this point of the analysis we can conclude that corruption does in fact affect prevalence of undernourishment, and it does so to a larger extent than democracy, since democracy does not seem to have an effect at all.

In *model 3*, the control variable GDP per capita is introduced in the model, but without offering significant results, while CPI stays significant. This result is somewhat surprising as GDP in many cases have proven to have an effect on most dependent variables connected to development and human welfare within social sciences, and even though it is not a main indicator of interest to this study, it was still expected to have some kind of effect on prevalence of undernourishment. Corruption playing a larger role than growth (which seem to not have an effect at all) in food security is a quite interesting finding.

In addition, a robustness check is carried out in order to strengthen the model and the results produced. CPI is replaced by the Control of Corruption indicator offered by the World Bank. As evident, the results still imply that corruption does affect Prevalence of Undernourishment, strengthening the results of the analysis.

Table 1. Multivariate regression analysis. Prevalence of Undernourishment.

Prevalence of Undernourishment (0-100%)	Model 1 (bivariate)	Model 2	Model 3	Robustness
Democracy Imputed Polity (0-10)	-,015 (,010)	,006 (,012)	,004 (,013)	,005 (,013)
Corruption Perception Index (0-10)		-,092*** (,025)	-,082*** (,031)	-,123** (,058)
GDP per capita, PPP, constant international \$,000 (,031)	,000 (,000)
Intercept	1,374*** (,069)	1,536*** (,077)	1,526*** (,084)	1,218*** (,109)
Adjusted R2	,011	,128	,091	,097
N	100	97	92	95

*p<0.10 ** p<0.05 ***p<0.01. Standard errors within parentheses. Data: The QoG standard dataset, Quality of Government Institute Database 2013.

At this point in the empirical analysis, the focus is on the relationship between the two IVs and the DV, while controlling for GDP. Additional control variables based on competing explanations within research of the variance of undernourishment will be included further ahead, but first follows diagnostics of the model and a further investigation of the two main relationships of interest in terms of an interaction model.

Diagnostics of the model

Diagnostics of the model is carried out in order to explore how well the model fits the actual data, which is done by investigating if any statistical assumptions are violated (Field 2009:214). In this case, most of the assumptions turned out not to be violated by the data in the model.

However, the distribution of errors of the dependent variable turned out not to be normal, but positively skewed, when running a frequency distribution (creating a graph plotting values of observations on the x axis) to analyse the data on prevalence

of undernourishment. In order to get a more normally distributed dependent variable, the PoU variable was transformed using the log10 method. Although not perfectly normally distributed, the transformed variable now has z values for both skewness and kurtosis under 1,96 (see Appendix 2).

Another assumption issue of concern is the fact that when investigating the linearity between each of the IVs and the main control variable and the dependent variable by plotting them, as it turns out, none of the relationships seem to be linear. This could mean that a standard OLS multivariate regression analysis might not be the most suitable method to examine these relationships. Based on this, it could be of particular interest to investigate the relationship by introducing another statistical model, which is carried out further ahead.

Some extra attention also needs to be paid to the issue of high leverage values, meaning the influence of the observed value of the dependent variable over the predicted values (Field 2009:217). Depending on what recommendation of statistical threshold applied, the problem of these cases are less or more prominent. If using the formula recommended by Hoaglin and Welsch (1978) $(2 \times \text{number of IVs} + 1)/n$, 15 observations falls below the high leverage cut-off-point. When applying the formula recommended by Stevens $(3 \times \text{number of IVs} + 1)/n$, however, only seven cases is considered to have a high leverage (Stevens 2002, Field 2009:217). Although it is problematic to exclude cases from an analysis for a number of reasons, one way to explore the unproportional influence could be to exclude them from the regression model. When excluding these seven cases, CPI does still have a significant effect on PoU.

To further ensure that these cases do not influence the coefficient in a misleading manner, checks including Cook's distance, Mahalanobis and DFBeta were applied to the 15 cases with high leverage according to the Hoaglin and Welsch threshold. These are all additional checks to ensure that no cases have a large effect on the model. No cases has a Cook's distance value greater than one, all are well below the threshold for what should be considered problematic. Same goes for the DFBeta check, where no cases have an absolute value above one. However, seven cases had Mahalanobis values above 15, which could possibly be problematic for the model (Field 2009:217-219).

Bahamas
Brunei
Equatorial Guinea
Kuwait
Qatar
Singapore
United Arab Emirates

When excluding these cases, CPI again turned out to be significant, with a b-coefficient of $-.057$. It is also of importance to press that high leverage cases do not necessarily signify a large influence on the regression coefficients, since they are measured on the dependent variables, not the independent variables (Field 217).

In addition, it should be mentioned that none of the 92 observations included in the analysis have both high leverage and a high student residual (outliers), which implies that we to some extent can be confident in the results although the seven cases above seem to have a certain level of high influence.

Assumptions are of importance when it comes to the ability to generalize the results beyond the sample included in the model (Field 2009:251). Since all development countries of the world (with the exceptions mentioned above), are included in the analysis, it could be argued that it is not of *as* great of an importance in this case, where the sample is more or less the same as the population, compared to if it would have been the case of 30 surveys conducted in the rural areas of Tanzania with the ambition to generalize the findings to the developing world at large.

Interaction model

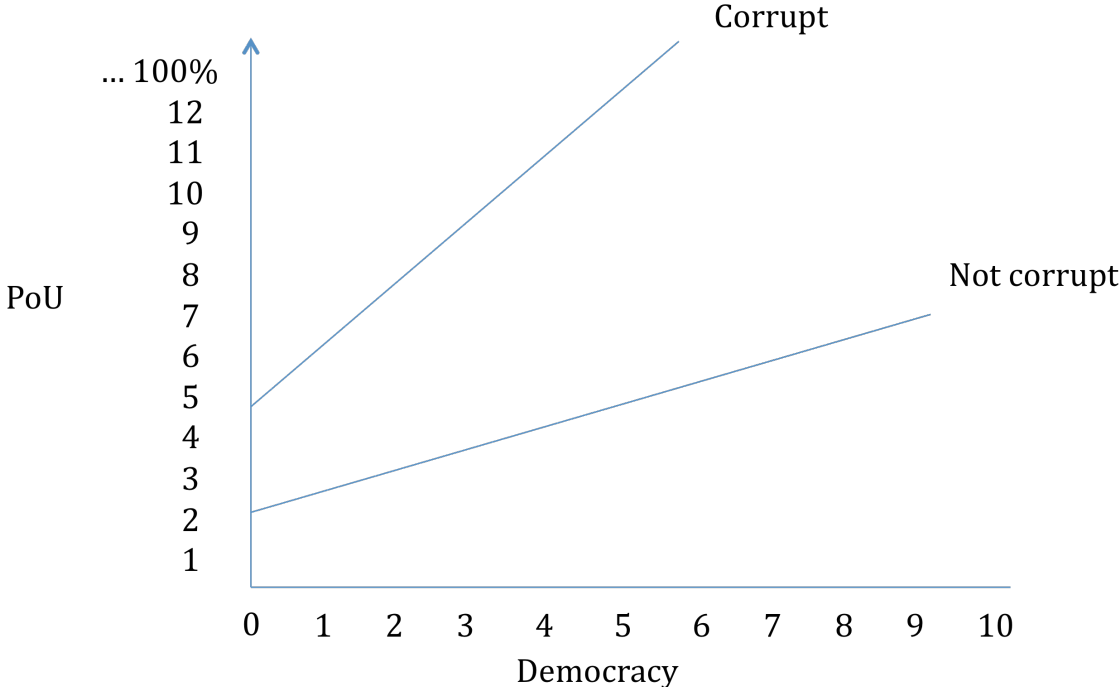
In order to investigate the relationship between democracy, corruption and undernourishment further, an interaction term was added to the analysis.

In this study, this is an attempt to “give democracy another chance” and not rule it out as an explanatory variable too early. It is a method to examine how two or more independent variables work together to impact the outcome variable. Thereby, it offers a deeper understanding of the relationship between the IVs and the DV. In addition, an omitted interaction effect in a model, where an effect actually exists could lead to important results being missed (Kasim 2008). The regression with an interaction term

is carried out in order to investigate if democracy could possibly have an effect on undernourishment, dependent on the level of corruption.

From a theoretical perspective, this examination is interesting for this study based on the Diamond argument, stating that democracy is hunted by the bad governance ghost (Diamond 2007). So, if the ghost is not there or if the ghost is weak, could democracy have a positive effect on hunger reduction? Could there, despite the results of the regression analysis, be a non-linear effect of democracy on prevalence of undernourishment, which is conditional upon the level of corruption? Put in another way, can we expect different effects of democracy on undernourishment in corrupt and in non-corrupt settings? The theoretical idea can be visualized as in the figure below.

Figure 3. The effect of democracy on undernourishment, dependent on corruption.



In order to conduct a regression analysis with interaction terms, CPI is recoded into a dummy variable, where 0 equals *corrupt* and 1 equals *not corrupt*. 0- 4,9 on the original CPI scale was recoded into 0 and 5-10 was recoded into 1. This was not based on some universal threshold of when a country turns ‘not corrupt’, as no such definite division exist, but the variable was simply split in the middle into two categories. This method can be motivated by the fact that the CPI variable has an ordinal scale, where the distance between 0 and 1 is the same as the distance between 9 and 10.

In addition, an interaction term, also called a moderator variable, is created by multiplying democracy with the corruption dummy (dem*CPIdummy).

In this way it is possible to examine how large the effect of democracy is on undernourishment when corruption is 0 and when it is 1. If this effect is to differ, that would indicate that the effect of democracy depends on if a country is corrupt or not (Field 2009:302-303).

Interaction model formula:

$$PoU = a + b_1 Dem + b_2 CPI + b_3 Dem * CPI + e$$

When adding only the corruption dummy variable to the analysis in *model 4*, not very surprisingly, it turned out significant with a b-coefficient of -,204. However, when introducing the interaction term to the analysis in *model 5*, there were no significant results what so ever. Even the significant effect of the dummy variable disappeared. It is quite obvious, from these results, that there is no effect of democracy on undernourishment, conditioned upon corruption levels.

Interaction terms imposes high levels of multicollinearity, which tends result in insignificant effects, based on the fact that they effects tend to “eat each other up”. This could possibly explain the fact that all the significant results disappeared in *model 5*.

Table 2. Multivariate regression analysis with interaction term. Prevalence of undernourishment.

Prevalence of Undernourishment (0-100%)	Model 4	Model 5
Democracy Imputed Polity (0-10)	,006 (,012)	,003 (,012)
GDP per capita, PPP, constant international \$,000 (,000)	,000 (,000)
Corruption Perception Index (0-1)	-,204* (,108)	-,475 (,382)
Dem*Corruption Perception Index		,032 (,043)
Intercept	1,361*** (,073)	1,376*** (,076)
Adjusted R2	,126	,121
N	90	90

*p<0.10 ** p<0.05 ***p<0.01. Standard errors within parentheses. Data: The QoG standard dataset, Quality of Government Institute Database 2013.

Additional variables

An additional statistical model was carried out, including more control variables, based on competing explanations of food insecurity within existing research.

The variables added to the overall analysis are poverty, freedom of trade, political stability, infrastructure and population.

Population is included based on the logic that the more people, the less food for each and one of them, often based on the argument that there is not enough food on this planet for all, especially considering the growing populations around our globe. Added to those analyses are often trade, due to the idea that if there is not enough food within the country for all its citizens, at least the country can import food. Infrastructure is commonly expected to affect access to food due to distributional concerns, and so is political instability. If people are poor, they can't purchase food even if it is distributed, hence poverty is often mentioned as a determinant of food insecurity.

Formula for the model with additional control variables:

$$\text{PoU} = \mathbf{b}_0 + \mathbf{b}_1 \text{CPI} + \mathbf{b}_2 \text{poverty} + \mathbf{b}_3 \text{population} + \mathbf{b}_4 \text{trade} + \mathbf{b}_5 \text{infrastructure} + \mathbf{b}_6 \text{political stability} + \mathbf{e}$$

As evident in table 3, CPI stays significant, throughout the regression model, although control variables are added to the analysis. The b-coefficient varies slightly and lands on -,105 in *model 11* where all indicators are included.

Another variable proving to have a significant effect on undernourishment is poverty, with a b-coefficient of ,003, meaning that if a country becomes one step (1%) more poor on the poverty scale, the prevalence of undernourishment increases with 3%. In other words, a 1% decrease in percent of the population living on below \$1,25 a day results in a 3% drop in prevalence of undernourishment.

The adjusted R-square value in *model 6* is 0,135, while increasing to 0,195 in *model 7*, indicating that the explanatory power of the model increases from approximately 14% to 20% when adding poverty to the analysis.

Table 3. Multivariate regression analysis with additional control variables. Prevalence of Undernourishment.

Prevalence of Undernourishment (0-100%)	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Corruption Perception Index (0-10)	-,085*** (,021)	-,082*** (,033)	-,082** (,034)	-,097*** (,035)	-,098** (,043)	-,105** (,048)
Poverty (% of the population)		,003** (,001)	,003** (,001)	,003* (,001)	,003** (,002)	,003* (,002)
Population			,000 (,000)	,000 (,000)	,000 (,000)	,000 (,000)
Trade Freedom				,005 (,004)	,005 (,004)	,005 (,004)
Infrastructure (1-7)					,015 (,060)	,013 (,061)
Political Stability						,019 (,057)
Intercept	1,552*** (,071)	1,478*** (,118)	,1478*** (,120)	1,182*** (,281)	1,100*** (,337)	1,154*** (,376)
Adjusted R2	,135	,195	,179	,200	,181	,162
N	97	52	52	50	46	46

*p<0.10 ** p<0.05 ***p<0.01. Standard errors within parentheses. Data: The QoG standard dataset, Quality of Government Institute Database 2013.

All other variables are explanations to food insecurity often lifted in existing research, therefore the results showing that none of them seem to have an effect on prevalence of undernourishment is both surprising and interesting.

One possible explanation could be that corruption actually carries the effect of other variables or that corruption is the true explanation behind other explanations.

Research has for example shown that corruption affects economic and governance factors, such as lower quality of infrastructure (Chetwynd, Chetwynd and Spector 2003). This could possibly also be the case for political stability.

Another explanation could be that different indicators affect different dimensions of food security. It could be the case where population and trade affects *food availability* in countries, while corruption and poverty plays a larger role in actual *access to food*. This result is of particular interest in relation to the argument that food availability is

not the main food security issue, it is rather an issue of food access for the most vulnerable groups within societies. Although a country has food available at the national level, it might not reach the poor and vulnerable groups due to their inability to buy it in the market or access it due to corrupted officials.

4.1 Summary of results

The bivariate regression analysis between democracy and undernourishment did not establish a relationship between the two variables. However, the level of perception of corruption turned out to have a negative effect on undernourishment. The results suggest that if a country becomes one step less corrupt on the CPI scale, the prevalence of undernourishment drops by ,092%. The adjusted R2 value could also tell us that 11% of the variance in prevalence of undernourishment can be explained by the level of corruption. Quite surprisingly, the control variable of GDP per capita did not have a significant effect on prevalence of undernourishment.

In an attempt to investigate the relationship between democracy, corruption and undernourishment further, an interaction model was applied. The results, however, did reject a possible interaction effect of democracy on undernourishment, conditioned upon the level of corruption.

In a third model a number of possible explanatory variables, based on previous literature, were added to the analysis in an attempt challenge corruption as an explanation to the variance in undernourishment and possibly detect other factors of importance. Added to the regression analysis were: poverty, trade, political stability, infrastructure and population. None of the control variables proved significant, with the exception of poverty with a b-coefficient of ,003. CPI stayed significant throughout the model with a b-coefficient of -,105 in the model with all control variables included. When adding poverty to the model the explanatory power raised from 11% to 16%.

Based on the statistical analysis carried out, the two **research questions** of this study can be answered:

Yes, Quality of Government does affect access to food.

Yes, Quality of Government does play a larger role in ensuring access to food than democracy. In fact, democracy does not seem to have an effect on access to food.

The results suggest that the statistical analysis failed to falsify the first two hypothesis (H1 and H2), as the results suggests that democracy does not affect prevalence of undernourishment, but QoG does. The third hypothesis (H3), however, was falsified as democracy did not at all prove to have an effect on access to food.

4.2 Strengths and weaknesses

Data and measurements

When evaluating the strength and weakness of an analysis, two main things to reflect upon is the validity and reliability, relating to the quality of the measurement used.

Validity refers to if an instrument actually measures what it is set out to measure. In this case, does prevalence of undernourishment really measure access to food?

Reliability means the ability of a measure to provide the same results under the same conditions (Field 2009:11-12).

Prevalence of undernourishment is one of many food security indicators provided by FAO, where the somewhat 20 different indicators aims to capture various aspects of food insecurity. The choice of food security indicators is based on expert judgment and the availability of data with sufficient coverage, in order to carry out to comparisons across regions and over time (FAO2 2014).

PoU is one out of four indicators measuring inadequate access to food, and was chosen as the measure of this study based on the fact that it is the most frequently used as well as the indicator used to monitor progress towards MDG1 both within research and the policy community. The choice of a widely used indicator provided by a well-establish international organization with an expertise on food security issues provides a certain confidence on the validity and reliability of the measure.

However, the PoU indicator as a measure of access to food has been criticized on a number of grounds. It has been accused for not sufficiently being able to capture changes over time and variance on a sub-national level between households (Smith 1998).

Although realizing the limitation of such a measure it does not pose any severe weaknesses to this study, since the ambition has not been to capture changes over time and since the aim has been to compare countries, not sub-national variance. However, it should be mentioned that the FAO measure does take into account the household level, as the indicator is partly based on household surveys, when creating the aggregated measure of PoU (FAOSTATS 2014).

Naturally there are a number of other possible measures when paying attention to food insecurity and hunger. One of them being famine mortality. However, since one intention for this study is to move away from the emergency approach to food security and switch focus to a more chronic form of hunger, measures such as famine mortality are not regarded as the most suitable. The aim is to include people living on hungry stomachs, not only people dying of hunger. In addition, famines are increasingly concentrated to Sub-Saharan Africa (Devereux 2000:3), hence, by moving away from emergency food insecurity, a much larger part of the world's food insecure population could be covered. In order to grasp food security on a global level and for all developing countries, focus on another aspect of food insecurity is needed. In addition, data collected during crises tend to be less reliable than data that is not.

Other measurement candidates are 'undernutrition' or 'malnutrition'. Undernutrition moves beyond calories and signifies deficiencies also in for example essential vitamins and minerals, while malnutrition refers to both undernutrition and overnutrition. These concepts are generally based on food-related anthropometric data, such as 'percentage of children under 5 years of age who are stunted' or 'percentage of adults who are underweight' (WHO 2014).

The main reason for avoiding this data is the fact that it is for a most measures of poor utilization of nutrients due to infection or illness, rather than access to food. It might in many cases be a result of an inadequate intake of food, but since it is affected by other factors as well, such as inadequate access to health services and inadequate maternal health practices it is not a straightforward measure of food insecurity in that sense. Hence, people might have access to food but due to other factors they do not utilize it. Also, anthropometric data is less available than other indicators and is more rarely updated on a regular basis, discouraging full comparisons across countries (Von Grebmer, K., et al. 2013).

The statistical analysis

When assessing the strength of the statistical analysis, two questions are of great importance. The first one is if the model is an accurate representation of the actual data, or if it is influenced by a small number of cases (Field 2009:11-12). This was examined by carrying out statistical diagnostics in order to detect outliers, residuals and influential cases. No outliers or residuals could be noticed, but a number of cases with high leverage values existed. In order to investigate the role of these cases, they

were excluded from the analysis, which proved to make no difference. Hence, we can conclude that the model fits the data reasonably well.

The second question is if the model can be generalized to other samples (Field 2009:11-12). This was done by checking assumptions, meaning a number of statistical tests on the model. Most assumptions were not violated, however, the distribution of errors on the dependent variable as well as linearity between the IV and the DV was. This was dealt with by log transforming the dependent variable in order to get a more normal distribution and then examining if a regression model with interaction terms was a more suitable analysis to examine the seemingly non-linear relationship, which it turned out not to be.

When assumptions are violated, extra precaution is needed when generalizing the results. However, in this study, all developing countries are included in the analysis (with the exception of cases with missing data), so this does not affect the analysis in quite the same way as it would have if only Sub-Saharan African countries were included in the sample.

A central question to every statistical analysis is the one of reversed causality. How can we establish that the effect is not running in the opposite direction? In this study, how can we be sure that it isn't in fact access to food affecting Quality of Government?

The simple answer is that we can't. It is possible that lower levels of undernourishment, meaning stronger and healthier citizens, leads to greater opportunities to hold officials accountable and thereby resulting in better Quality of Government.

However, based on previous literature and the arguments underpinning it, it can be argued that it most likely is QoG affecting undernourishment and not the other way around. A way to approach the challenge of reversed causality is to lag variables. In this case, the independent variable and the main control variable were lagged -1 to -14 years, suggesting that changes in those variables happened before variance in the dependent variable occurred. This is by no means a bulletproof method to ensure the direction of effect, but it is indeed a way to approach the issue and decrease the risk of reversed causality.

5. Concluding remarks

In conclusion, this study has provided empirical results that could be of interest both on a research and a policy level within the development community. It suggests that food security is indeed a governance issue, and more specifically a governance *output* issue.

The results indicate that there are legitimate reasons to question certain aspects of the literature promoting democracy as an important producer of human welfare and public goods provision, and swift focus to the Quality of Government.

As corruption, in this analysis, proved to be the strongest determinant of access to food among a range of common and more traditional explanations put forward within the literature, future research on this very topic is both motivated and desirable. One task could be to examine *how* corruption affects access to food and through which *mechanisms*. Based on the results of this study, it would also be of interest to investigate the interplay between corruption, poverty and undernourishment.

Research on these topics could possibly provide the development assistance community with valuable input on what kind of interventions to prioritize in order to further lower the prevalence of undernourishment in the world and finally reach the first MDG and other future targets related to food, hunger and nutrition.

Although international food security organizations and initiatives to some extent have acknowledged the role of governance, in order to develop the most effective hunger reducing actions, this study has hopefully offered valuable information on what kind of governance to focus on in order to fit all the people of this world by the global dinner table.

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Appendix 1.

Table 1. Countries included in the analysis.

Afghanistan	Croatia	Libya	Senegal
Albania	Cuba	Lithuania	Serbia
Angola	Djibouti	Madagascar	Seychelles
Antigua and Barbuda	Dominica	Malawi	Sierra Leone
Argentina	Dominican Republic	Maldives	Singapore
Armenia	Ecuador	Marshall Islands	Solomon Islands
Bahamas	El Salvador	Mauritania	Somalia
Bahrain	Equatorial Guinea	Mexico	Sri Lanka
Bangladesh	Eritrea	Micronesia	St Kitts and Nevis
Barbados	Ethiopia (1993-)	Moldova	St Lucia
Belarus	Fiji	Mongolia	St Vincent and the Grenadines
Belize	Gambia	Montenegro	Sudan (-2011)
Benin	Georgia	Morocco	Suriname
Bhutan	Ghana	Mozambique	Syria
Bolivia	Grenada	Myanmar	Taiwan
Bosnia and Herzegovina	Guatemala	Namibia	Tajikistan
Botswana	Guinea	Nauru	Tanzania
Brazil	Guinea-Bissau	Nepal	Thailand
Brunei	Guyana	Nicaragua	Timor-Leste
Bulgaria	Haiti	Niger	Togo
Burkina Faso	Honduras	Nigeria	Tonga
Burundi	India	Oman	Trinidad and Tobago

Cambodia	Indonesia	Pakistan (1971-)	Turkey
Cameroon	Iran	Palau	Tuvalu
Cape Verde	Iraq	Papua New Guinea	Uganda
Central African Republic	Jamaica	Paraguay	United Arab Emirates
Chad	Kenya	Peru	Uruguay
Chile	Kiribati	Philippines	Uzbekistan
China	Korea, North	Qatar	Vanuatu
Colombia	Kuwait	Romania	Venezuela
Comoros	Kyrgyzstan	Russia	Vietnam
Congo	Laos	Rwanda	Yemen
Congo, Democratic Republic	Latvia	Samoa	Zambia
Costa Rica	Lesotho	Sao Tome and Principe	Zimbabwe
Cote d'Ivoire	Liberia	Panama	

Note: The countries have been derived from the list of developing/emerging countries according to the World Bank Index (2010) and the FAO data on prevalence of undernourishment (2010-2012).

Appendix 2. Descriptive statistics and diagnostics.

Table 1. Descriptive statistics of all variables.

	N	Min.	Max.	Mean	Std. Deviation
PoU	100	0,72	1,84	1,2826	0,2839
Democracy	154	0	10	5,9384	2,97926
CPI	146	1,01	9,2	3,3034	1,45569
Poverty	79	0	87,72	19,7985	24,3434
Population	152	9806	1331379968	37725628,85	147813014,7
Trade Freedom	142	0	90	70,9577	12,96459
Infrastructure	107	1,89	6,54	3,9325	0,97783
Political Stability	154	-3,32	1,46	-0,2571	0,98034

Table 2. Correlation between the independent variables.

	Democracy	CPI
Freedom House Imputed Polity Pearson Correlation N	1*** 92	0,531*** 92
Corruption Perception Index Persson Correlation N	0,531*** 92	1*** 92
GDP per Capita (Constant International USD) Pearson Correlation N	0,232* 92	0,549***

*p<.05 ** p<.01 ***p<.001

Table 3. Multicollinearity - VIF and tolerance values.

	Tolerance	VIF
Freedom House/Imputed Polity	0,713	1,402
Corruption Perceptions Index	0,527	1,898
GDP per Capita, PPP (Constant International USD)	0,694	1,441

Figure 1. Distribution of errors on the dependent variable before log10 transformation

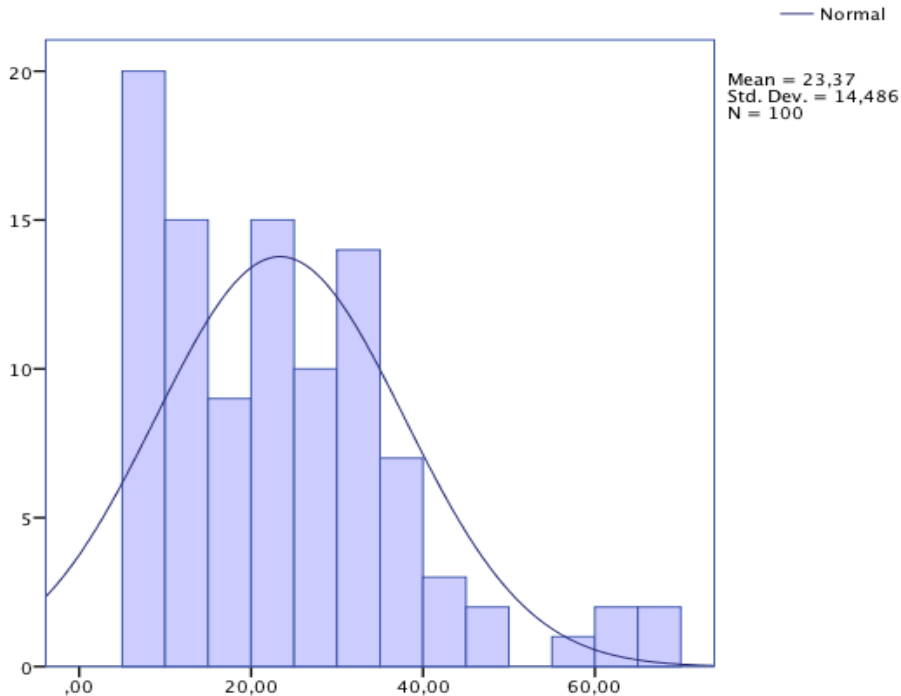


Figure 2. Distribution of errors on the dependent variable after log10 transformation

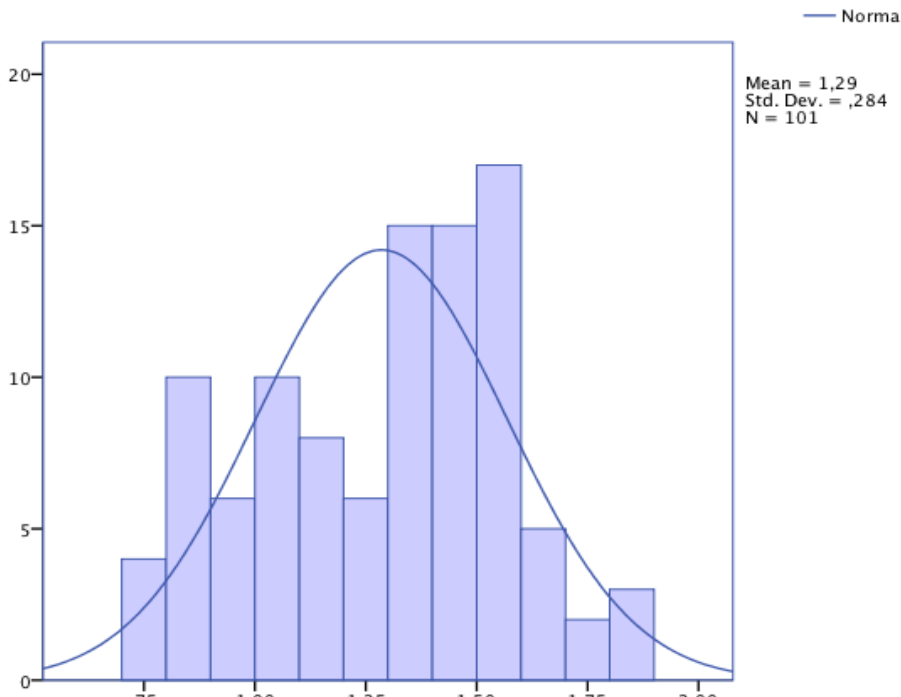


Figure 3. Homoscedasticity of the dependent variable.

