Natural resource abundance and food insecurity – An interrelationship? The Venezuelan case study

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Contents

Abstract

This dissertation analyses the connection between natural resource abundance and food insecurity. Through a thorough literature review a model establishing the link between the two areas of research was created. Natural resource abundance can lead to food insecurity, if the country has low institutional quality before a resource boom. The combination of resource abundance and lack of quality institutions can then contribute to a dependence on natural resources and increased corruption. These can lead to economic decline. Accepting FAO's dimensions of food insecurity, economic decline thus causes a decrease in the availability of, access to, utilisation and stability of food, all which lead to food insecurity. This model was then tested for its applicability on the current food crisis in Venezuela, a country with one of the highest proven oil reserves worldwide. The application showed that while economic decline played a vital role in how natural resource abundance led to food insecurity in the Latin American country, other connections are also important. This dissertation finishes with the observation that even though economic decline is one of the greatest problems Venezuela is currently facing, the political instability must first be solved before any other steps can be taken for the sake of improving food security in the country.

Abbreviations

BCV	Banco Central de Venezuela (Central Bank of Venezuela)
CIA	Central Intelligence Agency
CLAP	Comités Locales de Abastecimiento y Producción (Local committees for supply and production)
CNE	Consejo Nacional Electoral (National Electoral Council)
CPI	Corruption Perceptions Index
FAO	Food and Agriculture Organisation
FAD	Food Availability Decline
FED	Food Entitlement Decline
FONDEN	Fondo Nacional para el Desarrollo Nacional (National Development Fund)
GDP	Gross Domestic Product
GNP	Gross National Product
IACHR	Inter-American Commission on Human Rights
IMF	International Monetary Fund
MUD	Mesa de Unidad Democrática (Roundtable of Democratic Unity)
OPEC	Organisation of Petroleum Exporting Countries
PDVAL	Productora y Distribuidora Venezolana de Alimentos (Venezuelan producer and distributor of food)
PDVSA	Petróleos de Venezuela, S.A.
PSUV	Partido Socialista Unido de Venezuela (United Socialist Party of Venezuela)
UN	United Nations
WJP	World Justice Project
WTI	West Texas Intermediate – grade of crude oil

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1. Introduction

In recent years, Venezuela's socio-economic situation has deteriorated. Its economy declined by 3.89% in 2014 (World Bank, 2014), 6.2% in 2015 and 10% in 2016 (CIA, 2017). The country's oil-dependent economy has suffered greatly, mainly through the fall of oil prices from around $100 per barrel in May 2014 to approximately $48 in May 2017 (WTI crude oil) (World Bank, 2017). While the oil price has slowly been recovering, it is still low for an oil dependent economy such as of Venezuela, for which about 95% of the revenues come from oil exports (Statista, 2017; OPEC, 2016). Considering Venezuela's proven oil reserves are one of the highest in the world (OPEC, 2016), it is surprising that such an oil-rich country is facing these economic troubles.

Additionally, Venezuela's population is experiencing food insecurities: it lacks basic foods and medicine, either due to unavailability or high prices. While the minimum wage is rising parallel to the prices, it is not enough for families to survive on. 52% of the children monitored in a study carried out by Caritas Venezuela in 2016 showed sign of malnutrition, 25% showed extreme malnutrition, and 28% were at risk of becoming malnourished in the future (Egui Brito, 2017).The government is launching programmes to reduce shortages, but food insecurity continues to be a problem in Venezuela (BBC Mundo, 2016; Telemundo51, 2017).

In the Venezuelan context, research has focused on either the oil resource curse (see for example Alviarez, 2006; Palacios & Layrisse de Niculesco, 2011) or on food insecurity (Steiber et al., 2015; El Universal, 2016). A connection between the two, while touched upon only recently (see Purcell, 2017), has not been developed. Previous scholarship has evaluated such a relation between resource abundance and food insecurity in different contexts (see Nigeria (Akpan, 2010) and Laos (Fullbrook, 2010)). However, an elaboration of the potential connection could not be found, especially in the case of Venezuela, which is surprising as this case hints at a deep linkage between the two research areas. Therefore, this dissertation will further investigate that relationship. The aim of this thesis is to answer the following questions:

- How is food security linked to natural resource abundance?
- How can and does abundance in natural resources lead to food insecurity?

An in-depth literature review of the two scholarly areas will contribute to the creation of a model which will explain how resource abundance can lead to food insecurity. Due to the combination of two complicated issues, a complex and thorough analysis will result in a greater understanding of resource-abundant countries and the issues they experience. This research will contribute to both fields through an analysis of what has been determined, and a connection of the two. It will help shed light on the apparent paradox of natural resource abundant countries with high levels of food insecurity. Furthermore, the model created will help other developing resource-abundant economies to watch out for tell-tale signs that they might be leading their country towards food insecurity.

While this model in itself will be intriguing, it is deemed necessary to apply it to a case study to evaluate its applicability. Thus, the Venezuelan case will be taken to test the model as Venezuela's current situation is of importance for Latin America. This application test will contribute to scholarship by showing how the model can be used to analyse other case studies.

Therefore, the rest of this dissertation is structured as follows. Chapter 2 will give an in-depth review of the available literature on the resource abundance and food insecurity. The model of the interrelationship, based on the literature review, will be presented in Chapter 3. Chapter 4 will cover Venezuela's background before chapter 5 applies the model to the case study and see whether the theoretical model is applicable in this specific case. Finally, the conclusion will, besides summarising the most important points, include observations on how to improve food security in Venezuela.

2. Literature review

This literature review is divided into three parts: 1) an overview of the literature on natural resource abundance (and potential factors intertwined with it, such as institutional quality and corruption); 2) an analysis of the food security literature; and finally 3) an establishment of the literature which combines natural resource abundance and food insecurity. The research papers used for this literature review and the creation of the model were found through searching on the universities' library platforms and "Google scholar", using key words such as "natural resource abundance", "natural resource dependence", "resource curse", "food security", "food insecurity", "malnutrition", etc. In the research of resource abundance, priority was given to those with strong empirical and statistical components.

Natural resource abundance

The subject of natural resources is greatly researched and studied. Most of the papers published on this issue focus on the potential negative effects of natural resources such as lower economic growth after the discovery of resource abundance in the country, a phenomenon known as the "resource curse". A recent study by Havranek et al. (2016) analysed whether there is any consensus on the existence of the resource curse in literature. After analysing 300 journal articles, they conclude that there is no consensus "with approximately 40% of empirical papers finding negative effects, 40% finding no effects, and 20% finding a positive effect" (Havranek, et al., 2016, p. 1). This discrepancy is also visible when doing the qualitative literature review on the subject below.

The "resource curse" was first given its name by Sachs and Warner (1995). Focusing on economic explanations, regression models and data from 1970 until 1989 on Asia, Sub-Saharan Africa and Latin America, Sachs and Warner document a "statistically significant, inverse and robust association between natural resource intensity and growth over the past twenty years" (1995, p. 23). They explain that resource-led growth cannot sustain levels of economic growth. Once a country finds natural resources, they are likely to focus on resource-led growth instead of manufacturing exports, which would actually serve to ensure economic growth. This problematic is known as the "Dutch disease" (Sachs & Warner, 1995, p. 16). Their papers are often cited and are seen as the academic start to the analysis of the "paradox of the plenty", in addition to their research being thoroughly carried out. However, it is

questionable whether the results of more than 20 years ago can still be applied to studies of today. Furthermore, studies have been published which claim the opposite of Sachs and Warner. Additionally, questions of definition have arisen which must also be taken into account. Even Sachs and Warner's paper of 2001, which discusses the same problematic and claims to once again have proven the existence of the resource curse (2001, p. 837), has been slightly overshadowed by newer studies.

An interesting and important point was made by Brunnschweiler and Bulte (2008). They argue that previous research was confused by different definitions, concluding that natural resource abundance by itself does not actually cause lower economic growth (Brunnschweiler & Bulte, 2008). Instead, it is natural resource *dependence* which causes economic decline. This dependence is determined by resource abundance, constitutions and institutions (Brunnschweiler & Bulte, 2008). They conclude that it is important to differentiate between resource abundance and resource dependence, as most studies claiming the existence of the resource curse refer to natural resource abundance while actually analysing natural resource dependence (Brunnschweiler & Bulte, 2008). While their time span for analysis (1970-2000) and the countries analysed (60 resource abundant countries from the five continents) may be slightly different than that of other studies, potentially explaining their different results, Brunnschweiler and Bulte's point should be taken into account when analysing the abundance of natural resources.

Another study which contradicts Sachs and Warner's findings is that of Cavalcanti et al. (2011). Through an econometric model analysing whether oil abundance harms growth, they come to the conclusion that oil abundance leads to a positive income effect in the long run and has positive growth effects in the short run (Cavalcanti, et al., 2011, p. 1182). This quantitative study gives a different insight into the question of the resource curse. However, they do not explain in detail which variables they used. Furthermore, they used income levels as the dependent variable, excluding for example inflation levels which could rise simultaneously to income levels. Their results can thus not be fully taken into account for this thesis.

Other studies turned from an economic focus to a more political one; for example, Gylfason's paper of 2001. Through a regression analysis focusing on 65 countries he classifies as resource abundant, Gylfason concludes that it is not the existence of natural wealth that is the problem, but rather "the failure of public authorities to avert the dangers that accompany the

gifts of nature" (2001, p. 851). This results in neglecting the development of human resources. He argues that education is vital for economic growth and failing to invest in it can further decrease economic growth (Gylfason, 2001). In his regression analysis he shows that natural resource abundance correlates with lower education in a country (Gylfason, 2001). He thus argues that it is not the focus on resource-led growth that causes lower economic growth, but the lack of investments in education due to natural resource abundance.

Isham et al. (2005) also focus on the role of institutions, but from a different viewpoint. They argue that instead of institutional quality deciding how natural resources affect economic growth, it is the other way around. Focusing too much on natural resources in exports causes lower quality institutions, and since institutions are significant determinants of growth, natural resources indirectly cause economic decline (Isham, et al., 2005, p. 160). How natural resources and export structure affect institutional quality is however not explained in depth. Additionally, similar to all the other literature presented here, Isham et al. use data (1975-1990) which may have been useful then, but may not be applicable to studies of today.

Moreover, a majority of studies on the role of institutional quality actually focus on how said quality influences the management of natural resource abundance. Mehlum et al. (2006) test a regression of 87 countries (such as Nigeria, Zambia, Saudi Arabia, Korea, Taiwan, etc.) from 1965 to 1990, and conclude that institutional quality plays a role in how natural resource abundance does or does not lead to the resource curse. With this, they contradict Sachs and Warner's conclusion about the Dutch disease phenomenon. Natural resource abundance is harmful to growth only when the institutions of the country are "grabber friendly" (Mehlum, et al., 2006, p. 13). "Grabber friendly" institutions are defined by competing rent-seeking and production activities and weak rule of law, in combination with malfunctioning bureaucracy and corruption. These variables affect growth negatively because entrepreneurial resources are drawn from production into unproductive activities (Mehlum, et al., 2006, p. 3). The explanation of their chosen variables for the regression model is kept short and seems insufficient. However, in combination to the other mentioned works on how institutional quality plays an important role in natural resource abundance's influence on growth, this paper is valuable in understanding the given relationship.

These results are supported by Boschini et al. (2007). Their study analyses how the effect of natural resources on economic development improves with institutional quality in 80 resource-rich countries. Through an econometric model with a regression of Gross Domestic

Product (GDP) growth on measures of different types of natural resources, institutions and their interactions from 1975 until 1998, the authors conclude that their results "indicate that a sufficient improvement in institutional quality turns resources abundance into an asset rather than a curse" (Boschini, et al., 2007, p. 614). While the authors analyse the robustness of their own results and the problems they encountered, it is not clear whether the results are actually significant from the regression analysis. Additionally, they do not adequately explain why the data after 1998 was excluded from their study. However, in combination with the above and below mentioned studies, this study could provide marginal support for the theory that institutional quality plays a great role in determining the economic path of a resource-rich country.

A similar argument is visible in Kolstad's paper of 2009. Using data from Sachs and Warner (1997) and Mehlum (2006), data for GDP and Gross National Product (GNP) from 1970 until 1990, the democracy index of the Polity IV data set and the rule of law index from the Centre for Institutional Reform and Informal Sector, he tests two models against each other to analyse which institutions matter for natural resources to lead to lower economic growth (Kolstad, 2009). He concludes that it is private sector institutions, which control whether entrepreneurs choose between rent-seeking or productive activities, are more important in deciding future economic growth than public sector institutions, which control whether politicians try to secure re-election through patronage (Kolstad, 2009, p. 441). One could argue that Kolstad's results are questionable considering he only used the rule of law index to measure private sector institutions, but it potentially includes various indices combined, such as corruption and regulatory law enforcement (World Justice Project, 2016). The definition of "rule of law" from the Centre of Institutional Reform could not be found, but it is assumed that World Justice Project's (WJP) definition is similar, considering they are talking about the same issue. Furthermore, his regression analyses look at both types of institutions individually and then combined, which gives his study more strength. He further supports his argumentation by another study he conducted in the same year with Wiig (2009), analysing the different reasons as to why the resource curse may exist. "The conclusion is that policy initiatives that do not promote the impartiality of institutions, nor attend to the underlying interests and incentives keeping a bad institutional equilibrium in place, will not help lift the resource curse." (Kolstad & Wiig, 2009, p. 5324)

Van der Ploeg (2011) finds similar results in his regression models. Through the application of regression models of countries between 1965 and 2007, van der Ploeg concludes that "the best available empirical evidence suggests that countries with a large share of primary exports in GDP have bad growth records and high inequality, especially if quality of institutions, rule of law and corruption are bad" (2011, p. 406). While the results are not conclusive and further investigations are necessary, van der Ploeg's study offers another explanation to the role of institutional quality in the economic development of resource abundant countries.

A more recent study by Venables (2016) discusses why development with natural resources has proven so difficult, analysing 51 countries defined as "resource-rich" by the International Monetary Fund (IMF). He concludes that "resource-rich countries need to be well-intentioned, far-sighted, and highly capable" not to fall victim of the resource curse (Venables, 2016, p. 162). The reasons he gives are: technical difficulties of the government to cope with fluctuations in export earnings, weak governance, difficulties maintaining fiscal discipline, and patronage politics (Venables, 2016, p. 164). These points are a combination of the above mentioned ideas, concluding that various factors impact how natural resources affect economic growth, especially the role of governance, and institutional quality. He argues that resource revenues alter the economic structure of the government, and to ensure this does not negatively influence growth, economic management and the diversification of the economy are necessary (Venables, 2016). This study's shortcomings (such as the lack of detailed analysis) are compensated by the abovementioned studies which claim the same as Venables does.

Not only institutional quality was concentrated on as an alternative explanation to the economic focus as to why the resource curse exists. Corruption was investigated as another potential "culprit". For example, Leite and Weidmann's paper (1999) investigates the determinants of corruption and the growth effects of corruption due to natural resources. After theoretically creating a model explaining how corruption, in the form of rent-seeking activities of natural resources, can reduce a country's economic growth rate, they empirical test the model. "One of the main results was to confirm that capital intensive natural resources are a major determinant of corruptions." (Leite & Weidmann, 1999, p. 30) They argue that strong institutional quality is necessary when natural resources are discovered to stop corruption from increasing within the country.

Damania and Bulte (2003) take a step in that direction and analyse the interrelationship between corruption, democracy and the natural resource curse through a regression model. They conclude that resources have a large, negative and significant effect on growth in highly autocratic countries. The influence of resources on growth in democracies depends on the measure of democracies, while the level of decreased economic growth depends on how much the resource boom leads to increased lobbying. This could turn the support for the manufacturing sector away towards the resource sector. This is especially the case if the government does not face political opposition, so argue Damania and Bulte (2003). The strength of this study is their critical view of Sachs and Warner's studies, in addition to using their data to disprove their point.

Considering that these studies may show that natural resources can lead to corruption and natural resource abundance can contribute to economic decline, it is deemed necessary to shortly look at the literature on how corruption can influence economic growth negatively as well. A study by Méon and Sekkat (2005) gives a clear answer to this question, claiming that corruption has a negative impact on growth and investments. "Our results strongly reject the 'grease the wheels' hypothesis in favour of the 'sand the wheels' hypothesis." (Méon & Sekkat, 2005, p. 91) The "grease the wheels" hypothesis states that corruption may in fact support economic growth, while the "sand the wheels" hypothesis states the opposite. They argue that corruption slows growth, especially when rule of law is weak and the government inefficient (Méon & Sekkat, 2005).

The majority of the studies on corruption and economic growth support Méon and Sekkat's argument that corruption has negative effects on economic growth. These results were shown by Assiotis and Sylwester's (2014) study. They conclude that the control of corruption and the level of democracy are positively associated with economic growth, meaning that the lower the corruption and the more democratic a country is, the higher should economic growth be. However, the authors themselves admit that more research is necessary to find conclusive results. One such research could be Anh et al.'s paper (2016), in which they argue that corruption does not directly influence growth negatively. Instead, corruption influences indicators of economic development, such as the environment, health, safety, equity and trust (Anh, et al., 2016, p. 322). By influencing those indicators negatively, corruption indirectly impacts economic welfare. While the regression analysis focused on Vietnam includes only

12 years (2000 until 2012), it is one of the most recent studies and is supported by the results of the previously mentioned studies.

Unfortunately, as can be seen from this literature review and to the best of the author's knowledge, there has been no thorough analysis of natural resource abundance and the potential resource curse for years after 2012. The studies found after 2012 focus rather on the role corruption has on economic growth, or similar topics. This of course somewhat constrains this dissertation as no recent results can be discussed, especially since the model created will be applied to the current Venezuela. However, since the majority of the papers in the past agree on the existence of the resource curse (in specific cases) due to natural resource abundance or dependence, their conclusions can be taken as valid for this dissertation.

Food (in)security

The issue of food insecurity causes similar disagreements between scholars, though maybe not as extensive. The definition in itself has been discussed for years. When food security and food insecurity became a topic of discussion, food security was defined as a country having access to enough food to meet dietary energy requirements (Pinstrup-Andersen, 2009, p. 5). This definition looked primarily at the supply side of food security. Then, in the 1970s, food security was defined as "access by all people to enough food to live a healthy and productive life" (Pinstrup-Andersen, 2009, p. 5). However, scholars and professionals contested that this definition was not broad enough. Finally, food security was globally defined as:

> "Food security exists when all people, at all times, have physical and economic access to sufficient and nutritious food to meet their dietary needs and food preferences for a healthy and active life." (Pinstrup-Andersen, 2009, p. 5)

This definition was decided at the 1996 World Food Summit and it includes all the aspects professionals and specialists argued to be necessary to be able to eradicate food insecurity worldwide (Pinstrup-Andersen, 2009, p. 5). The definition may be seen as the conclusion of three paradigm shifts in food-security-thinking and scholarship, described by Maxwell (1996). The first shift was from a global and national to a household and individual perspective; the second from a food first perspective to a livelihood perspective; and finally, from objective indicators to subjective perception (Maxwell, 1996, pp. 156-160).

Even though the definition of food security is set, there is still disagreement on what food (in)security actually entails. In this regard, the academic debate has also undergone a transformation, and the discussion continues. First, a country and its population were said to experience food insecurity if there was not enough available food. This explanation is known as the Food Availability Decline (FAD) approach, which focused on the supply-side of food security. The underlying assumption was that malnutrition and undernourishment were caused by lack of food (Yaro, 2004, p. 24; Haruna & Umar, 2011, p. 66). However, availability of food may not be the only aspect relevant for food security, as the ability to buy the available food is also important. Moreover, scholars realised that malnutrition and undernourishment could be caused by other factors, such as diseases or digestive problems, irrelevant of how much food was available (Yaro, 2004, p. 24; Sen, 1983). Furthermore, the FAD model "gives little clue to the causal mechanism of starvation, since it does not go into the *relationship* of people to food" (Sen, 1983, p. 153, emphasis in original). This led to a different approach in the 1980s, started by Sen (1983).

Sen argued that a country may have enough available food, but its population may not be able to access it (1983). Sen called this the approach of food entitlement. He defines it as "the ability of people to command food through the legal means available in the society" (Sen, 1983, p. 45). Food insecurity does not arise from the lack of available food, but rather from the lack of access to said available food (Food Entitlement Decline – FED). "Purchasing power is of paramount importance" in influencing food security for citizens (Yaro, 2004, p. 25). Entitlement depends on a person's endowment set, which is the combination of all the resources owned by a person; the entitlement set, which are all of possible combination of goods and services a person has access to according to their endowment set; and finally, the entitlement mapping, which is the relationship between the endowment and entitlement sets (Yaro, 2004, p. 25). A person will experience food insecurity if their entitlement set does not provide them with enough food to avoid starvation, also called entitlement failure (Yaro, 2004, p. 25; Sen, 1983). Poverty is seen here as the main cause for food insecurity (Yaro, 2004, p. 25). This approach is thus an improvement to the FAD approach. Nonetheless, it has a narrow focus on famine and starvation, not including the various steps of food insecurity before starvation and famine set in. Moreover, it is criticised due to the vagueness of definitions and the inability to explain famine in complex emergencies (Yaro, 2004, pp. 26-27). Even Sen admits the limitations of the FED approach, as it focuses only on legal

transactions and does not necessarily take into account the reality of the situation (Sen, 1983, p. 49). Due to the limitations of this approach, other food insecurity approaches surfaced.

One such approach is the vulnerability approach. It claims that populations and households will experience food insecurity if they are vulnerable to it. This dynamic approach includes the dimensions of command over food (entitlement), state-civil relations (empowerment) and the structural-historical form of class relations (crisis proneness) (Yaro, 2004, p. 32). Combined, these three dimensions provide a thorough overview of the aspects which affect food insecurity on a vulnerability framework. Vulnerability can be caused by lack of capability, by exposure, or by lack of empowerment to change things (Watts & Bohle, 1993, p. 121). "Its usefulness lies in its use of vulnerability as a starting point, its endogenisation of political capital and its incorporation of dynamism and structures in a single analytical framework." (Yaro, 2004, p. 35) Additionally, it emphasises the intersection of the different structures and tendencies that make up food (in)security (Watts & Bohle, 1993, p. 124). However, the problem with this approach would be the question of how to measure vulnerability. Additionally, critics argue that the definition of vulnerability is too unclear; too many connotations exist (Dilley & Boudreau, 2001, p. 230). It is important, they argue, to define what the vulnerability is to. Simply stating "vulnerability to food security" has led to a "lack of common understanding about fundamental terms and concepts", which has caused misunderstandings as to how to measure vulnerability, and what data to use to analyse it (Dilley & Boudreau, 2001, p. 231).

Finally, the United Nations' (UN) Food Agricultural Organisation's (FAO) approach to food insecurity combines all the above mentioned. In their introduction to the basic concepts of food security, FAO defines four main dimensions of food security: availability, access, utilisation and stability (2008). Availability of food concerns the supply side of food security (similar to FAD); access to food regards the extent to which households can buy food (FED); utilisation of food concerns itself with how the body takes nutrition in, which is dependent on health and education; and finally, the dimension of stability involves how stable the other three dimensions are over time (FAO, 2008: 1; see also Babu, et al., 2014; Hendriks, 2015). This approach is, of all the already mentioned approaches, the most useful as it is the most extensive one, taking into account all the different aspects of food insecurity. Babu et al. argue that knowing all the dimensions and how to measure them is vital to be able to establish proper programmes to battle food insecurity (2014).

One example of the application of FAO's approach to analysing food insecurity would be Ecker and Breisinger's food security system (2012). They analyse both the macro and micro dimensions of food and nutritional security, including the access and availability dimension (agricultural sector and trade and transport), the utilisation dimension (health and education) and the stability of them (interventions and external shocks) (Ecker & Breisinger, 2012, p. 5). The macro level –the economy and the state– influence the micro level through macroeconomic stability –economic growth and distribution– which influences public spending and investment and in the end, governance and the quality of institutions (Ecker & Breisinger, 2012, p. 5). All the dimensions of food security which FAO suggests are applied in their system, and combine the above mentioned approaches to food security. While Ecker and Breisinger's model may sound complex, it is extensive and does not forget how multidimensional the problem of food security is.

Another example of the application of FAO's food security dimensions is Hendriks (2015). She uses the dimensions to generate a food security continuum to understand food insecurity as a range of experiences. Food insecurity, she argues, is not static and changes over time, and seeing food insecurity as a continuum of experiences makes it possible to identify people at various different stages of food insecurity to be able to adapt interventions accordingly (Hendriks, 2015, p. 617). As does the FAO, Hendriks sees poverty as one of the main causes of insecurity (2015, p. 612). This continuum is especially useful for generating solutions as it does not see food insecurity as being one-dimensional. Hendriks argues, just as FAO, that food insecurity is multidimensional.

The political stability dimension can also be expanded by Rubin's analysis of contemporary famine (2016). While this dissertation does not look explicitly at famine (famine is the worst stage of food insecurity), Rubin's paper still allows an in-depth perception of the role of political actors. Rubin argues that famine is due to key political actors using their resources and power to achieve their interests (2016, p. 86). Famine is thus generated by those political actors either not realising they are causing famine, or causing it on purpose as a way to achieve their goals (Rubin, 2016, p. 88).

A connection of natural resource abundance and food insecurity

One of the few found papers which discuss the connection between natural resources and food insecurity is Akpan's research (2010). He discusses oil resource management and food insecurity in Nigeria to show the influence of Nigeria's oil on the food insecurity in the country. Through a regression model, he analyses Nigeria in the years from 1976 until 2007 and concludes that oil revenue accounted for around 12% of shocks to food insecurity in the first quarter of the time analysed (Akpan, 2010, p. 3). The results "reveal that the over-dependence on oil resulted in the neglect of the agricultural sector, hence decline in the production of food" (Akpan, 2010, p. 1). Akpan argues that these consequences of oil-dependent revenues are due to corruption, fiscal imprudence, debts and policy inconsistencies (2010, p. 24). While Akpan's analysis of the resource curse and food insecurity is extensive and may be useful to find a connection between the two areas of research, he does not differentiate between the different dimensions of food insecurity. As was seen above in the literature review of food insecurity, more recent studies have shown that availability of food is not the only aspect of food security. Akpan fails to include any other dimensions.

Another paper which discusses, to an extent, the interrelationship analysed in this dissertation, is Kavallari et al.'s paper (2014). They simulate scenarios with a partial equilibrium model to see how global economic growth affects food security at the level of availability (Kavallari, et al., 2014). They do not discuss how resource abundance can lead to lower growth, but rather how lower economic growth can lead to increased food insecurity. Due to the theory of the resource curse leading to lower growth, this paper is potentially useful to understand how the economic decline caused by natural resources could lead to food insecurity. The authors come to the conclusion that while economic shocks have no effect on food security indices and food availability indices in the first year, production of food will be lower in the following year, leading to low-income countries increasing their imports of agricultural commodities, making them more vulnerable to future shocks (Kavallari, et al., 2014, p. 579). However, similar to Akpan's paper, Kavallari et al. claim that food security depends primarily on food availability and access only, which as has been shown above, is not the case according to the most recent studies on food security. Thus, this paper is useful for looking at how lower economic growth can affect the dimension of availability, but not of the other dimensions.

Finally, Fullbrook (2010) argues that the food insecurity experienced in Laos is due to the resource curse the country is experiencing. He claims that, due to natural resources, the

investment is made in that sector, instead of in environmental security and this leads to food insecurity. Additionally, focusing the investment on natural resources causes a lack of investments in government capacities, leading to no reinvestment of revenues in health and education. This in turn causes insufficient wages to buy imported goods to compensate for the lack of national production, bringing about food insecurity. These are valid consequences of focusing on natural resources, but Fullbrook failed to analyse in depth how the resource curse itself unfolded in Laos.

As can be seen here, while there is great amount of research on the topics of natural resource abundance and food insecurity, not much research on the connection between the two was found. Other papers focus primarily on either one of the research areas of this dissertation, and may mention a connection to the other in passing. But, to the author's knowledge, there has been no thorough analysis of the potential interrelationship between natural resource abundance and food insecurity.

3. Methodology

The model described in this chapter was created through an in-depth analysis of the literature, combining the theories/arguments on natural resource abundance and food insecurity. The model seeks to contribute to the field by analysing the connection between the two areas as hinted at by Akpan (2010), Kavallari et al. (2014) and Fullbrook (2010).

Two points must be made before explaining the model. First, the foundation which this model is based on is a political and institutional one. The author understands that the resource curse cannot be analysed without looking at economics. However, considering that the majority of research done in the area of the resource curse is economic, by focusing on the political and institutional side, this research seeks to contribute a new way of looking at resource abundance and food insecurity. This does not mean that the economic aspects of both resource abundance and food insecurity are ignored; the important role of the economy will be clarified later in this chapter. Second, the framework was not done through an econometric analysis, as most of the literature used for this model has done. Previous regression analyses in both the food security and resource abundance fields were however useful to establish this framework.

The analysis of the two fields has led to the conclusion that natural resource abundance and food insecurity are connected through four features. It is the combination of the following four points that is important to explain an interrelationship, and how natural resource abundance can lead to food insecurity.

1) The country has low institutional quality before the natural resource boom (defined as discovery or price increase of the resource).
2) Due to feature 1 and a natural resource abundance, the country experiences higher resource dependence and higher corruption.
3) Natural resource dependence and corruption lead to economic decline.
4) Economic decline leads to lower availability of, less access to, worse utilisation and reduced stability of food, which in turn leads to food insecurity.

The fourth feature relies on the assumption that food security depends on the availability, access, proper utilisation and stability of food, which will be clarified throughout this chapter. An explanation and justification of the model and features thus follows below, based primarily on the literature reviewed in chapter 2. The model is kept simple as there are many

more sub-steps between corruption leading to lower growth, or how inadequate utilisation of food leads to food insecurity. Including them would cause the model to lose clarity. The model is also purposely straightforward to ensure broad application. It may not be detailed, but it is well researched and based on that research. Its applicability will be tested in chapter 5. Before showing a visualisation of the model, the four features will be explained.

a) Feature 1 – Institutional quality

During the research on how resource abundant countries can experience lower economic growth and even food insecurity (such as the cases of Nigeria and Venezuela), institutional quality was found to play an important role in the management of resource abundance. The literature review already hinted at this aspect, but here, its importance will be justified. Studies have shown that the quality of institutions influences the direction a country will go towards at the moment of discovering natural resources. Kolstad (2009) explains this argument, saying one should not only focus on the economic aspect of resource abundance, but also on poor institutions which lead to negative social outcomes. He proposes two different models: the rent-seeking model and the patronage model (Kolstad, 2009, p. 439). The rent-seeking model focuses on private sector institutions: entrepreneurs have to choose between rent-seeking and productive activities, and the probability of choosing one over the other depends on the quality of the private sector institutions (Kolstad, 2009, p. 439). The patronage model analyses how politicians could use natural resources to secure their re-election. Through a resource boom, investment in resource extraction is likely, but so is an increase in patronage and inefficiencies in public sector institutions; which of the two is more dominant depends on the quality of those institutions (Kolstad, 2009, p. 439). Kolstad concludes, after econometrically testing the hypotheses, that only private sector institutions matter statistically in influencing social and economic outcomes (2009, p. 441).

Kolstad's findings are supported by Mehlum et al.'s (2006). They argue that the "[...] indication of resource curse only appears for countries with inferior institutions" (Mehlum, et al., 2006, p. 1). The institutions which benefit from the occurrence of the resource curse are "grabber-friendly" institutions, where rent-seeking and production are competing activities, and rent-seeking is easily done (Mehlum, et al., 2006, p. 3). In countries where such "grabber friendly" institutions are prominent, "resource abundance increases the political benefits of

buying votes through inefficient redistribution [...] [this is] only mitigated in countries with adequate institutions" (Mehlum, et al., 2006, p. 4). The authors use an institutional quality index based on data from Political Risk Services to prove their hypotheses through a regression analysis. A later publication by Kolstad and Wiig (2009) expands upon the argument of both Kolstadt (2009) and Mehlum et al. (2006), including more than just the rule of law as an indicator for institutional quality. They argue that institutions which enhance impartiality and accountability are especially important (Kolstad & Wiig, 2009, p. 5321).

Boschini et al.'s (2007) results provide further support for the argument that institutions matter in how natural resource abundance affects a country's economic growth. One of their hypotheses is: "The effect of natural resources on economic development improves with institutional quality" (Boschini, et al., 2007, p. 599). They prove this with an econometric model, showing that institutional quality helps improve the effect of natural resources on a country's economy (Boschini, et al., 2007). Boschini et al. use a range of different variables to measure institutional quality, such as the quality of bureaucracy, corruption in government, rule of law, risk of expropriation of private investment and repudiation of contracts by government (2007, p. 600).

Furthermore, Damania and Bulte (2003) argue: as long as there is competition within a country (which can be an indicator of institutional quality or regime type), natural resource abundance does not necessarily lead to lower economic growth as the government has to decide to use the revenues from the resource to improve welfare to keep the population's votes. Should a government not face political opposition, lobbying is likely to increase; the support will move from the manufacturing to the resource sector and this in the end can lead to lower economic growth (Damania & Bulte, 2003, pp. 25,29). These theories were tested empirically, and Damania and Bulte were able to find statistically significant proof for them.

Another paper which argues for the importance of institutional quality in determining the outcome of resource booms is Brunnschweiler and Bulte's (2008). Through two regression models they analyse the effect of natural resource dependence on economic growth and conclude that while natural resource *abundance* is positive for economic growth, it is in combination with low institutional quality that it leads to natural resource *dependence* (Brunnschweiler & Bulte, 2008, p. 261). This natural resource dependence is what leads to economic decline (Brunnschweiler & Bulte, 2008). This connection is gone into more depth in features 2 and 3 below.

While all the above mentioned studies disagree on the exact details due to different definitions and data used in their empirical analyses, they agree on the fact that institutional quality is of importance when a country is experiencing a resource boom. This raises the question of how institutional quality should be measured. Since rule of law is the variable that most of the studies can agree on as being an indicator of institutional quality, it should be included in this analysis. A possible way of measuring it is the WJP's definition of rule of law, which includes constraints on government powers, absence of corruption, open government, fundamental rights, order and security, regulatory enforcement, civil justice and criminal justice (World Justice Project, 2016). These indices are not available for every country and thus the World Bank Governance Indicators are also useful for measuring what is needed, when keeping in mind the definition of 'rule of law' from the WJP (World Bank, 2016). These indicators include rule of law, corruption control and government effectiveness, among other. Nonetheless, indices alone are not enough to prove low institutional quality. For the application of this model, in addition to presenting indices about institutional quality in Venezuela, a qualitative analysis will be done. This will explain why the indices are as they are and provide a deeper understanding of Venezuela's institutional landscape.

b) Feature 2 – Abundance, dependence and corruption

With low institutional quality, natural resource abundance can lead to the dependence on those resource and/or corruption. The following section will analyse both possibilities.

Before moving on to natural resource abundance leading to dependence, the difference between the two terms must be clarified as there are many studies which see them as the same. Natural resource dependence is not the same as natural resource abundance. As discussed in the literature review, the difference is important. Abundance occurs when a country discovers a great amount of natural resource in its territory, but it does not mean that the country's economy will be dependent on it (Brunnschweiler & Bulte, 2008, p. 13). Dependence occurs when the economy can function (almost) only through the use/sell of the resources.

Governments may see a resource boom as an opportunity to increase national revenues. The incentive behind this action may even be positive, for example to increase social spending. However, such decisions can lead to the country's revenues being greatly or fully dependent

on natural resource revenues. Natural resources may give the government and its population a false sense of security and "lead governments to lose sight of the need for good growth-friendly economic management" (Gylfason, 2001: 850; see also Rossi, 2011; Venables, 2016). Additionally, natural resource related activities may become more lucrative for entrepreneurs and cause them to move into the resource sector (Rossi, 2011, p. 13). Not only the government, but the population will come to rely on the revenues generated through the resource abundance. As will be seen in feature 3, this can eventually lead to economic decline.

Natural resource abundance can also lead to corruption within a country. Corruption is defined here as defined by the World Bank and Transparency International, as it is their numbers and indices that are used in this thesis. Corruption, according to the World Bank is "the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests." (World Bank, 2016) Similarly, Transparency International defines corruption as "'the abuse of entrusted power for private gain.' Corruption can be classified as grand, petty and political, depending on the amounts of money lost and the sector where it occurs." (Transparency International, 2016)

Studies have shown that natural resource rich economies seem more likely to have "socially damaging rent-seeking behaviour on part of the producers" (Gylfason, 2001: 850; see also Sachs & Warner, 2001; Venables, 2016). This problem is exacerbated through weak governance (see feature 1), as the government either has problems maintaining fiscal discipline (powerful groups get public spending even though their projects have low social returns) or is involved in patronage politics to ensure re-election (Venables, 2016, pp. 172-174). Leite and Weidmann (1999) tested these claims empirically. Through a corruption regression they conclude that capital intensive natural resource industries tend to induce higher levels of corruption, all else equal (Leite & Weidmann, 1999, p. 22). Additionally, sounder institutions such as an increased rule of law were associated with lower corruption (Leite & Weidmann, 1999, p. 23). Even though their study is almost 20 years old and it is questionable to what extent their results are still applicable today, they offer a thorough insight into how natural resources can cause corruption. Natural resource abundance can cause key powerful actors to see the opportunity to pursue their interests through the use of natural resources. Should the institutions not be intact, corruption is bound to increase.

Moreover, rents from natural resources can lead to rent-seeking (another form of corruption). "Rent refers to the discrepancy between the cost of production of a commodity and its price. When the price of a commodity far exceeds its costs, actors use political means to capture the rent." (Hammond, 2011, p. 350) This in turn encourages ineffective behaviour and reduces production – which in turn causes lower economic growth.

c) Feature 3 – Dependence, corruption and economic decline

As has been shown above, a combination of low institutional quality and natural resource abundance can lead to natural resource dependence and/or corruption. This section will analyse how natural resource dependence and corruption can both lead to lower growth.

The Oxford Dictionary defines "economic growth" as "an increase in the amount of goods and services produced per head of the population over a period of time" (Oxford Dictionaries, 2017) and it is usually measured in the growth of GDP. Economic growth is important for a country as it helps, for example, to increase public spending and investment (Ecker & Breisinger, 2012). Economic decline is the opposite: the country becomes less productive, less innovative and cannot help its population as necessary.

When natural resources lead to lower growth, scholars speak of a resource curse, a paradox of the plenty. Sachs and Warner (1995) and many others speak of natural resource abundance almost always leading to lower growth. Other studies claim that natural resources by themselves cannot lead to lower growth, and in some cases can even lead to increased growth, for example in the cases of Norway and Botswana (Cavalcanti, et al., 2011; Brunnschweiler & Bulte, 2008). It is therefore difficult to claim that the resource curse always occurs.

However, there are cases when resource rich countries have experienced lower growth after finding resources, e.g. Nigeria or Venezuela. It is therefore safe to say that while the resource curse is not universal, it does occur in some occasions, and always differently, depending on the circumstances. For example, dependence on natural resource revenues can lead to rendering other export sectors uncompetitive and thus reduce export-led growth (Sachs & Warner, 2001, p. 835). This is the so-called "Dutch disease" in which the natural resource boom and the "associated surge in raw material exports drive up the exchange rate (or real wages), thus hurting other exports" (Gylfason, 2001, p. 850). This is part of the "crowding out

logic" most scholars use to explain how natural resource abundance can lead to the resource curse (see Sachs & Warner, 2001; Gylfason, 2001). Growth-supporting activities are crowded out through the focus on natural resource revenues. Such activities could be trade-manufacturing, education, entrepreneurial activities, etc. (Sachs & Warner, 2001, pp. 833,835). Another explanation could be that the nation is so dependent on the export of one commodity for hard currency earnings to pay for imports, that should anything happen to the price of the commodity, growth would decrease (Venables, 2016, p. 164). In the end, it is lack of diversification of the economy through a dependence on natural resources, which can lead to lower growth.

Additionally, Gylfason offers an explanation that natural resource dependence can lead to lower growth through a lack of focus on education. "It needs to be emphasised that it is not the existence of natural wealth as such that seems to be the problem, but rather the failure of public authorities to avert the dangers that accompany the gifts of nature." (Gylfason, 2001, p. 851) This once again goes hand in hand with feature 1, the role of institutional quality. Gylfason's claim is that through focusing on natural resources, investments in human capital are neglected (2001, p. 851). He shows in his study that economic growth directly varies with education, and that there is a direct correlation between natural resources and lower public expenditure in education (Gylfason, 2001, pp. 853,854). His explanation is the following: "Awash in easy cash, they [the government] may find that education does not pay. Nations without natural resources have a smaller margin for error and are less likely to make this mistake." (Gylfason, 2001, p. 858)

Another explanation is that resource dependence can lead to weakened institutions which can then lead to lower growth. Not only is low institutional quality one of the reasons as to why countries may experience lower growth due to dependence on natural resources; institutions are also influenced for the worse by resource dependence (Isham, et al., 2005, p. 161). "Institutions, which are endogenously determined by the nature of natural resource dependence, are significant determinants of growth." (Isham, et al., 2005, p. 161) It seems to be a two-way relationship.

Moreover, corruption can likewise lead to lower growth. Through natural resources, corruption can increase through rent-seeking behaviour, which in the long run can also damage economic growth (Gylfason, 2001, p. 850; van der Ploeg, 2011). Leite and Weidmann's study shows through a growth regression analysis that long-term growth is

negatively affected by the level of corruption (1999, p. 25). Additionally, Méon and Sekkat's (2005) comparison of two contrasting theories, whether corruption greases or sands the wheels of growth, led to the conclusion (through a cross-country regression) that the "sands the wheels" theory is right most of the time (2005, p. 80). Méon and Sekkat analyse the theory that corruption may only hamper growth indirectly by negatively affecting investments, and disprove it by showing that corruption can directly negatively influence growth, even when controlling for investments (2005, p. 81).

Possible reasons for corruption having this negative effect on economic growth could be that corruption "scares away investors, reduces the productivity of public expenditures, distorts the allocation of resources" (Anh, et al., 2016, p. 308). In this study, the authors prove empirically with recent data (years 2000-2012) that corruption affects a number of indicators of economic development which "impact significantly on economic welfare and a country's development potential" (Anh, et al., 2016, p. 322). The indicators could be environment, health, safety, equity and trust (Anh, et al., 2016, p. 322). This means that corruption may also indirectly influence economic development.

There are studies, however, that contradict these claims. One for example would be Aidt et al.'s work (2008). Through an empirical analysis of their theoretically created model, they conclude that in regimes with high institutional quality, corruption has a significant impact on growth, while in regimes with low institutional quality, corruption has no effect on growth (Aidt, et al., 2008, p. 195). However, while their research itself was interesting and well carried out, their main variable for institutional quality was political accountability. Political accountability is only one aspect of institutional quality, which is why Aidt et al.'s work cannot fully be taken into account here.

Independent of how natural resource dependence and corruption lead to lower economic growth, the above studies have shown that it can happen. This is not to claim that it always does. Rather, it reveals that under certain conditions, natural resource dependence and corruption can contribute to a lower growth.

d) Feature 4 – Economic decline and food insecurity

To make feature 4 more understandable, the assumption of food security being determined by availability, access, utilisation and stability of food, on which feature 4 is based on, will be explained first. This will allow to establish what exactly influences food security and insecurity, and then, by explaining feature 4, how lower economic growth influences the dimensions of food security negatively.

Food security and its four dimensions

To repeat FAO's definition of food security, it is "when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life." (FAO, 2015) While there exists a lot of confusion and misuse of the definitions "food security" and other related terms (Hendriks, 2015, p. 609), FAO's definition is universally accepted (see Hendriks, 2015; Babu, et al., 2014; Saravia-Matus et al., 2012). There have been no greater transformations in scholarly thinking on food security. Therefore, this paper will also define food security as defined by FAO.

The FAO published various documents with regards to their understanding of food insecurity, its causes, drivers, measurement and how to reduce the probability of it occurring. From their definition of food security, they identify four main dimensions of food security:

- Availability
- Access
- Utilisation
- Stability

The availability of food "addresses the 'supply side' of food security and is determined by the level of food production, stock levels and net trade" (FAO, 2008, p. 1; Hendriks, 2015, p. 611). This dimension analyses how much food is physically available in the country, and can be measured through food balance sheets (Babu, et al., 2014, p. 19). However, as is shown by the FED model (see literature review), availability is not enough. This is where the access dimension is important. Access to food also plays a role in whether a country and its

population is experiencing food insecurity (FAO, 2008, p. 1). It can be physical access to the market to buy food, which depends on the infrastructure in the country and market outlets, or economic access at a household level, which depends on the purchasing power and level of food prices (Babu, et al., 2014, p. 20). But both access and availability to food are useless if the food cannot be prepared properly, or the nutrients are not taken up by the bodies due to bad health. Utilisation of the food is thus just as vital. Food utilisation is "commonly understood as the way the body makes the most of various nutrients in the food" (FAO, 2008, p. 1) and is influenced by feeding practices, food preparation (Babu, et al., 2014), in addition to access to health care, education and housing (Hendriks, 2015). Finally, these three dimensions are influenced by their own stability. "Adverse weather conditions, political instability, or economic factors" also influence a person's and country's food security status (FAO, 2008, p. 1). To have food security, resilience needs to be built up to keep the stability dimension steady (Hendriks, 2015, p. 611).

"The strength of this definition is its comprehensiveness and imperative for 'concerted actions at all levels' and 'coordinated efforts and shared responsibilities' across institutions, societies, and economies to tackle food insecurity effectively" (Ecker & Breisinger, 2012, p. 3). Additionally, these four dimensions are supported by empirical studies on specific case studies, such as the case study of Mozambique by Mabiso et al., which analyses the drivers of food security in Mozambique to be farm production, food purchases, food prices, degree of household market participation (influenced by government policies), delivery of public services and investment and government policies (2014, pp. 653-655). All these drivers are sub-parts of the four dimensions mentioned above.

To summarise, food insecurity in this study is caused by a lack of availability and access, bad utilisation of food and a decrease in the stability of those dimensions. The explanation of these dimensions facilitates the understanding of the last feature.

The effect of economic decline

Now that it is clear how food insecurity is caused, the connection between natural resource abundance and food insecurity becomes visible. Economic decline (as most probably caused by resource abundance and low institutional quality) can negatively influence the dimensions of food security. This is best seen in Ecker and Breisinger's (2012) system of food and nutrition, in which they depict the interrelationship between the macro and micro levels of a society and economy and how their interaction influences the nutritional status of individuals, an important aspect of food security. The system is depicted in diagram 1 and shows how the four food security dimensions are influenced (orange boxes).

Economic decline, as defined in feature 3, leads to less revenue, lower production, less investments, lower living standards and higher unemployment. This influences how food is available, accessible, utilised and how stable those dimensions are. For the sake of simplicity, the different forms of economic decline are implied when "economic decline" is referred to.

*How **availability** is influenced*

Diagram 1 shows how economic growth is at the root of the other factors in a country, such as public spending and investments, which in turn influence trade, agriculture or health. The macroeconomic effects of lower economic growth depend on the country's economic structure. If the country is dependent on its agriculture for the food for its population, lower production and lower investments (due to economic decline) could result in a reduction in agricultural goods, leading to lower availability of food. Should a country depend on the production of a certain export for revenues to be able to import food, a similar situation arises as reduced production would mean less revenue from exports to import food. This could reduce the amount of available food in a country.

Additionally, should the country experience the Dutch disease, as explained in feature 3, the production of the agricultural sector could be crowded out as the government focuses too much on the investment of the new sector, which generates more revenues due to exports. This makes the country dependent on imports, leading to the just mentioned scenario that lower economic growth could reduce the revenues available to pay for food imports.

The micro level is influenced by the effects economic decline has on the macro-level. If a country cannot produce or import enough food, households would suffer from lack of availability. However, as argued by FAO's dimensions, availability is not the only dimension which influences whether a country experiences food insecurity or not. The access to available food is also necessary.

*How **access** is influenced*

As can be seen in diagram 1, poverty directly influences access to food. Poverty is seen as a major obstacle to food security (Hendriks, 2015, p. 612; Saravia-Matus, et al., 2012). It is caused by a lack of economic growth as unemployment rises (Ecker & Breisinger, 2012, p. 5; Fullbrook, 2010, p. 15). Thus, as poverty reduces a household's purchasing power, food security "requires economic growth resulting in poverty alleviation" (Babu, et al., 2014, p. 8). This reduces a household's ability to buy food.

Moreover, deterioration in infrastructure can also mean that roads or markets are not sufficiently built or maintained. Economic growth influences how investments are made; should there be economic decline, decrease in investments is probable to occur as well. This could mean reduction in investments in transportation, for example for roads or markets (Ecker & Breisinger, 2012, p. 5).This reduces the population's access to food. In combination with poverty, the population is likely to experience food insecurity.

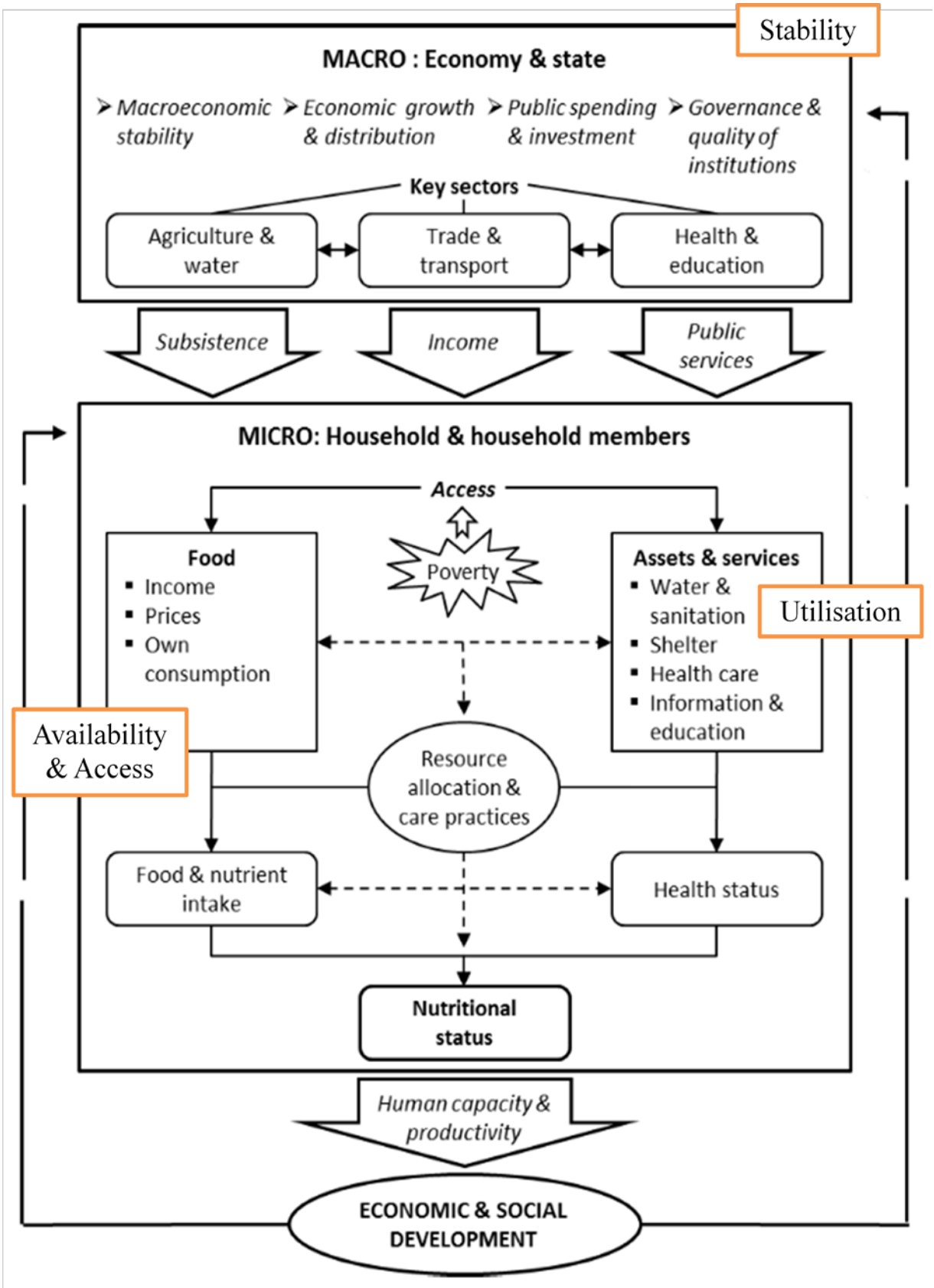

Diagram 1 : *Food and Nutrition System by Ecker and Breisinger (2012, p. 5), adapted by author*

*How **utilisation** is influenced*

Education and health services also suffer similarly to infrastructure during economic decline. Investments could lack in the educational sector. Education and economic growth depend on each other and should investment in education be reduced due to lower growth, it could lead to further economic decline (Gylfason, 2001, p. 853). As can be seen in diagram 1, education also influences the health status, which affects the nutritional status. This alters a person's capacity and productivity, which in turn shapes the country's economic and social development.

As the economy is struggling, health services are influenced by reduced public spending and investments in the health sector, such as in water and sanitation, shelter. As these factors are reduced, food insecurity is increased. Additionally, due to potentially lower educational standards, the possibility to educate the population sufficiently on nutritional aspects is reduced. In combination with deteriorating health services and lack of clean water, it could lead to a reduction of proper utilisation of food, as either people in need do not know how to eat nutritiously, or people's bodies cannot take in the nutrition from the food they eat due to health issues (Ecker & Breisinger, 2012, p. 5; see also Irons, 2009).

*How **stability** is influenced*

"Availability, access and utilisation depend on the broader food system, which in turn depends on the social, economic and political environment." (Hendriks, 2015, p. 614) This shows how the stability of the country also influences those three dimensions. Stability can be at economic and political levels. Economic decline influences economic stability negatively. Should imports of foods decline, or inflation soar in a country, the economy will struggle to keep those under control so as not to worsen the situation. This influences governance and the quality of institutions and could potentially worsen the country's troubles. Furthermore, political stability can be influenced by a worsening economic situation at a household level. Parts of the population may find that their government is not taking enough care of their situation and see this as a reason to start demonstrating. This could lead to repressions by the government or to democratic elections, depending on the regime type. Even then, the country would be in a period of transition, which is not necessarily stable.

All these points could worsen the stability of availability, access and utilisation of food. For example, in a less democratic state, should a leader fear that they might lose power, they could use the revenues left to try to buy voters by investing in inefficient programmes. This scenario was discussed thoroughly by Rubin (2016). He argues that food insecurity occurs especially due to the interests and power of key actors in the country. While he focuses on famine (the worst stage of food insecurity), it is still applicable to an extent to this case. When key actors have the resources (power) and certain interests, they could be the cause of food insecurity, either because they do not care or notice that their actions could lead to food insecurity, or because they understand food insecurity as a weapon of war or social exclusion (Rubin, 2016, p. 88). As can be seen, the economy and the state are very influential and arch over the other aspects. Should either of their stability suffer, it can be felt in the rest of the system.

Economic decline may be central, but not the only aspect which can cause a decrease in the four dimensions. For example, oil revenue can directly cause shocks to food insecurity due to neglecting the agricultural sector (see Akpan, 2010). Corruption, fiscal imprudence can also directly influence food insecurity. Natural resources could also lead to decline in environmental security, which in turn can lead to food insecurity (see Fullbrook, 2010). However, economic decline is currently the only connection between natural resource abundance and food insecurity that could be justified through the literature. Even though the author is aware of these potential alternative explanations, they will not be included in the visualisation of the model, diagram 2.

Diagram 2 thus visualises how natural resource abundance can lead to food insecurity through lower institutional quality, by leading to natural resource dependence and corruption, which in turn prompt economic decline.

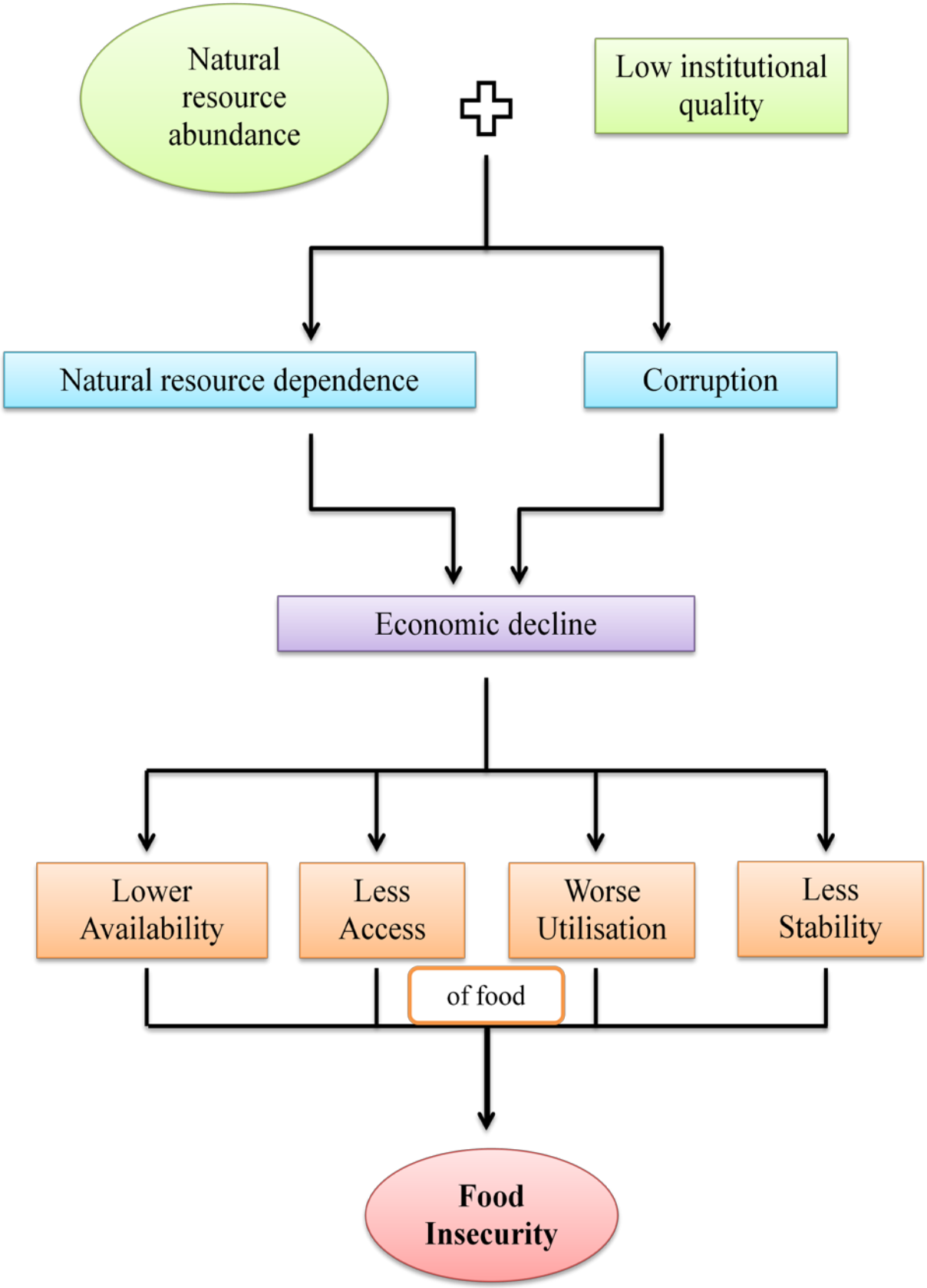

Diagram 2: *Visualisation of connection between natural resource abundance and food insecurity, created by author*

e) Discussion of model

The model visualised in diagram 2 was created through a thorough literature review and analysis of various research papers on the two areas: natural resource abundance and food (in)security. The model has various benefits. Through the qualitative review, it was efficiently created, and which can now be applied and tested. It is the first important step of further empirical work, and can contribute considerably to the study of the interrelationship between these two areas. Moreover, its creation cost nothing more than time and can therefore be made available for anyone interested in this field of work. Additionally, the model is adjustable. Even though the model is tested first within this research, the simplicity shows its flexibility in the application on different countries.

Nonetheless, the author is aware there are some weaknesses. One weak attribute may be that this model was built qualitatively through an extensive literature review. It was made through the results others have produced in their empirical analyses and thus relies on their quality of work. Furthermore, since it is qualitative, it cannot boast an empirical analysis of its own and neither is it backed up by mathematical models.

Furthermore, the model is limited by the studies included in it. The author does not claim to have incorporated all academic literature on natural resource abundance and food insecurity. There may be studies which have not been identified which could influence the model. However, the studies were picked according to their impact and influence, their relevance and their empirical studies, and should therefore be sufficient to establish a certain degree of reliability.

Additionally, economic decline may not be the only reason as to why the four dimensions of food security are negatively influenced. However, this model is based on the connection of natural resource abundance and food insecurity only through economic decline. Corruption, for example, may also be a cause for reduced stability; corruption may also influence how resource revenues are dispersed in the economy and may be the cause as to why there is not enough investment being made in transportation. This would negatively influence access and availability. Moreover, institutional quality may also directly influence food insecurity through influencing access and stability. The possibilities are endless, but they could not be justified for this model.

Due to these concerns, this model must be tested on how suitable it is to analyse why a specific country is experiencing food insecurity even though it has great natural resource abundance, or whether a country is likely to experience food insecurity in the future. Examining whether Venezuela's oil resource abundance played a significant role in causing the food insecurity it is currently experiencing will show whether the model is applicable to this country and will indicate whether it should be tested on further locations. Furthermore, the testing of the analysis will also show other potential ways resource abundance can lead to food insecurity.

4. Background of Venezuela

After gaining independence in 1830, Venezuela experienced various different regimes, most of them dictatorships. In the 1910s, oil was first drilled in Venezuela, leading the Latin American country to be one of the top oil exporters in the world. In 1976 oil was nationalised and PDVSA (Petróleos de Venezuela, S.A.), the country's main oil and gas company, was established (Hammond, 2011, p. 355). The oil boom of the 70s financed a social democratic project to improve living situations and reduce poverty (Hammond, 2011, p. 362). When oil prices crashed in the 80s and Venezuela's economy plummeted, the government sought the help of the IMF. The IMF agreed to provide them a loan under the conditions of introducing neoliberal reforms, which led to an augmentation of the national oil and public transport prices (Robertson, 2017). The population in Caracas protested against this, leading to a crackdown on the protests leaving hundreds dead, an event known as the *Caracazo* (Hammond, 2011, p. 364). After these events, Venezuela was ready for change. Hugo Chávez, a military officer dissatisfied with his government's work, led a failed military coup in 1992 against the ruling government. Six years later, he won the presidential elections and was inaugurated in 1999 by appealing to the poor sectors of the Venezuelan population and promising to remove old state powers (Enríquez & Newman, 2016, p. 604).

In 1999, he asked the population to vote in a referendum to change the constitution for which the population voted yes with 81.74% (CNE, 2000). The new constitution established liberal democratic institutions (López Maya, 2014, p. 69). Over the years, after fighting the opposition in national strikes, a recall referendum and other elections (Lissidini, 2012), Chávez gained control over those institutions of the government and replaced the positions with people loyal to his "revolution" (Coker, 2014, p. 95). By 2010, a state had emerged which was parallel to the one established in the new constitution (López Maya, 2014, p. 72). Simultaneously, Chávez invested greatly into the social programmes called *misiones* to alleviate social inequality. These missions were funded through oil revenues.

After Chávez died in 2013, he left a "political vacuum" (López Maya, 2014, p. 68). Even though Chávez chose Nicolás Maduro as his successor, the new President does not have the same level of support as his predecessor. "Without Chávez, the legitimacy of the new presidency was questioned, especially given a margin of victory of only 1.5 percent." (López Maya, 2014, p. 78) Claims by the opposition about the government disrespecting laws and

human rights were discredited by the ruling party, resorting to "persecution, and in some cases jailing of high-ranking opposition politicians" (López Maya, 2014, p. 79).

Venezuela has additionally been in a situation of economic upheaval for the last few years. Its economy declined by 3.89% in 2014 (World Bank, 2014), 6.2% in 2015 and 10% in 2016 (CIA, 2017). 95% of the country's revenues come from oil-exports, which is why the economy was especially hardly hit by the drop in oil prices in the last few years (OPEC, 2016; López Maya, 2014). There has been a 50% decrease in production in the manufacturing sector compared to the time before Chávez, in addition to a decrease in agriculture and agribusiness, and 65% of food products and manufactured goods are imported (López Maya, 2014, p. 74). Not only has the economic decline led to a lack of food, but also to a lack of medicine and other basic goods. While the minimum wage is rising in parallel to prices, it is not enough for families to buy sufficient food. Even though the government has tried to battle food insecurity with social missions and food bags, a report from the Ministry of Health of Venezuela in 2016 displayed that Venezuelans were suffering from much worse health compared to the previous years: infant death rates rose more than 30% compared to 2015, and death rates in mothers follow similar patterns (Contreras, 2017).

This in turn has led to many demonstrations against the ruling government. In 2014, mass demonstrations from the opposition broke out in Caracas, which were clamped down on by the National Guard. Live ammunition, rubber bullets and teargas was used against the crowds protesting against President Maduro and his government (Human Rights Watch, 2015). This resulted in the deaths of 43 people and the detention of 3,306 people (Human Rights Watch, 2015). In December 2015, things seemed to change as the oppositional MUD (Mesa de la Unidad Democrática – Democratic Unity Roundtable) won the majority of seats at the parliament (Brodzinsky, 2015). However, since then, the government has been in a "lock-down" situation as the two opposing sides in the government try to delegitimize each other. Even though the opposition spent 2016 fighting for a recall referendum to remove Maduro from office, Maduro's government still controls various institutions, such as the National Electoral Council (CNE), which at the end of 2016 halted the recall referendum (CNE, 2016). With new protests erupting in March 2017, both the economic and food security situation have been worsened.

It is this current situation which will be focused on in chapter 5, influenced by a resource boom in the early 2000s. Over the years, Venezuela has experienced various resource booms:

One, when oil was first extracted and made available on the international market between 1912 and 1943 (Wilpert, 2003); Two, when the oil prices increased in the 1970s; and finally, once again when the oil prices started rising in 2003 and significantly after 2005 (Statista, 2017; BBC News, 2017). In this dissertation, this last resource boom will be the point of reference. It may be questionable as to why the analysis already starts in the timeframe between 2003 and 2005 if the oil prices dropped in 2009. The price drop of 2009 was a short setback after which the Venezuelan economy recovered due to the high oil prices of the previous years. In addition, after 2009 the oil prices rose again until 2013 when they fell drastically and have not recovered since. Additionally, 2003 is an interesting year for Venezuela's economy because it had just suffered through a two month-long strike which caused its GDP to fall by 27.6% (Vera, 2015, p. 546), and the oil price was just starting to increase again.

5. Application of framework on Venezuela

The model of chapter 3 will now be applied to see whether the connection between natural resource abundance and food insecurity exists in the case of Venezuela, starting with an analysis of Venezuela's institutional quality. Throughout the application, the actual applicability of the model will be analysed, and the extensions or improvements added.

a) Feature 1 – Venezuela's institutional quality

Low institutional quality is necessary for a connection between resource abundance and food insecurity. From both the literature review and the justification of the model, institutional quality can be measured by looking at the indicators in table 1. These indicators were chosen as they align with the definition of institutional quality given by the majority of the literature used for creating the model.

Venezuela	**2002**	**2003**	**2004**	**2005**
Corruption control	-1.0	-1.0	-0.9	-1.0
Government effectiveness	-1.0	-1.0	-1.0	-0.9
Regulatory quality	-0.6	-1.0	-1.1	-1.1
Rule of law	-1.2	-1.3	-1.2	-1.2
Voice and accountability	-0.5	-0.5	-0.6	-0.7

***Table 1**: Venezuela's institutional quality 2002-2005 (World Bank, 2016)*[1]

The World Bank Governance indicators in table 1 give an overview of the situation in Venezuela until 2005, when oil prices were already rising quickly. The numbers are aggregate estimates which can vary from -2.5 to 2.5; the lower the number, the worse the situation. The numbers paint a bleak picture of Venezuela's institutional quality before the resource boom. A closer analysis of the situation in Venezuela below provides support to the numbers.

[1] *Corruption control* "captures the perception of the extent to which public power is exercised for private gain" (World Bank, 2016). *Government effectiveness* "captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies." (World Bank, 2016) *Regulatory Quality* measures the "perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development" (World Bank, 2016). The *rule of law* indicator "captures perceptions of the extent to which agents have confidence in and abide by the rules of the society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (World Bank, 2016). *Voice and accountability* "captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media" (World Bank, 2016).

Corruption is not focused on here individually, since analysing many of the other indicators already includes corruption as well. It will also be gone into more depth in feature 2.

At the beginning of Chávez' presidency, government effectiveness seemed to actually be of good quality. Chávez implemented various policies for the poor sectors of the country. It started with *Plan Bolívar* in 2000, which provided social services to the poor (Loperena, 2003, p. 13; Harnecker, 2004). In 2002, *misiones* were introduced to battle social problems. These missions were funded with oil revenues. Through the development of around 30,000 community councils and thousands of missions (Coker, 2014, p. 99), poverty and inequality were reduced, enrolment in school and university increased (López Maya, 2014, p. 76). However, these achievements were linked to Chávez directly, and were especially efficient during his electoral campaigns. They mostly declined when there were no elections to be won. Additionally, the plans and missions caused corruption among army officials who coordinated the programmes (Loperena, 2003; Faria, 2008). Even though these missions gave the population the opportunity to voice their problems, they resulted in the bypassing of institutional sectors (Coker, 2014, p. 99; Lissidini, 2012, p. 171). Since the health committees, communal councils and communes from 2003 onwards were especially in support of the Chávez administration, critics argued that they lost autonomy (Hetland, 2017, p. 24). As shown in chapter 3, such low institutional quality would negatively influence the management of natural resources (see feature 2 below).

Moreover, after being elected as president in 1998, Chávez' government faced severe opposition in the first years, especially inside state structures. "[This] created alternative mechanisms to pursue its agenda [...] Chavista state structures, for example, have often bypassed local and state agencies by funding social projects through grassroots cooperatives loyal to the government." (Coker, 2014, p. 95) Therefore, due to the coup attempt in 2002, the PDVSA strikes in 2002/2003, the recall referendum of 2004 and the opposition's boycott of the 2005 parliamentary elections, Chávez was able to systematically remove oppositional forces from the government using alternative methods. Moreover, since the opposition focused their power and activities on the street, "institutions became irrelevant [...] This had profoundly destabilising political consequences." (Buxton, 2005, p. 335)

In addition, "public officials and government media have continued pursuing efforts to discredit Venezuela's nongovernmental human rights organisations" (Human Rights Watch,

2006). The Supreme Court, in cases against human rights organisations, mostly decided in favour of Chávez and against the organisations. In 2004, the Supreme Court was filled by twelve new judges which were part of Chávez' party (Human Rights Watch, 2006). This shows a reduction in the independence of the judiciary system. Also, while the government made sure to include the sectors of the population that had been excluded with the previous government, it now saw to exclude people from programmes who had supported the past regime (Coker, 2014, p. 95). The National Assembly was furthermore filled with Chávez supporters, which helped him pass the majority of his laws (Loperena, 2003). The Inter-American Commission on Human Rights (IACHR) published a report in 2003 that criticised Venezuela's "weak separation of powers, the concentration of power in the executive branch, and the growing participation of the armed forces in government" (Human Rights Watch, 2006) and repeated similarly in their 2006 report (IACHR, 2006).

Similarly to government effectiveness, Venezuela's situation of "voice and accountability" first seemed to be positive. Between 1998 and 2005, Venezuelans had various opportunities to participate in selecting their government: 1998 when voting for Chávez, 1999 in the constitutional referendum, 2000 in another presidential election, 2004 in a recall referendum and 2005 in parliamentary elections. It is therefore difficult to claim that Venezuelans had no voice and that the Chávez administration had no right to rule. As much as the opposition might claim that the elections were fraudulent, in the case of the 2000 and 2004 elections, international observers assured they were fair and free (Lissidini, 2012, p. 170). There is also the opinion that the opposition had plenty of freedom to express their discontent. For example, between 2000 and 2010, only 5.4% of the TV audience share was on state channels, the rest was on private channels, which were mostly oppositional (Sapiezynska, 2017, p. 207). Moreover, the opposition may have only focused on portraying an one-sided view of the situation in the country, while Chávez' government promoted freedom of expression (Sapiezynska, 2017, p. 2010).

Still, there are instances where freedom of expression and press freedoms were reduced, especially for the opposition. Legislation was passed which threatened said freedoms (Human Rights Watch, 2006; Buxton, 2005, p. 331). In 2004, new media restrictions were introduced, such as fines against stations thought to incite public disturbances. Moreover, "in instances where the judiciary, congress or electoral administration raised objections to government policy, the president threatened reprisal and dismissal" (Buxton, 2005, p. 330). Parties and

civil society organisations were forced to decide whether they were for or against the administration: “This constrained the evolution of political alternatives.” (Buxton, 2005, p. 345) This explains why this indicator worsened over time.

Rule of law also deteriorated during Chávez’ presidency. It was claimed that police forces were not respecting human rights, resorting to violence and executions against innocent people (Human Rights Watch, 2006). The time period from 2000 to 2005 was filled with demonstrations, many of which got out of hand, as people from both sides of the conflict were prone to violence. “[...] the Chávez presidency was characterised by political instability, violence and recurrent breakdowns of the constitutional order.” (Buxton, 2005, p. 328) Additionally, “police violence, torture, and abusive prison conditions are also among the country’s most serious human rights problems.” (Human Rights Watch, 2006)

While the government may have passed social policies to improve inequality and poverty, it was not that keen to pass policies in favour of the private sector, which would have ensured high regulatory quality. Due to Chávez’ ideology of “productive socialism”, the state interfered with basic production decisions of key industries, including agriculture (Rossi, 2011: 14; see also Palacios & Layrisse de Niculesco, 2011). One such example would be decree number 1546, which established the Law of Land and provided the means to expropriate land from landowners who had too much land (Mielnik, 2008). It meant to redistribute land among poor farmers. Chávez established institutions to deal with the new agricultural progress and helped farmers bring their products to the market (Mielnik, 2008, p. 611). However, it also increased the weaknesses of the legal infrastructure and poor farmers believed they could sit on other people’s properties until they were shown proof of ownership or the land was expropriated (Mielnik, 2008). Weak legal infrastructure also negatively influenced resource management, as it incited corruption (see feature 2).

Overall, institutional quality was low in Venezuela. This led to problems with natural resource abundance.

b) Feature 2 – Increased natural resource dependence and corruption

The second feature of the model argues that due to bad institutional quality, Venezuela likely experienced higher resource dependence and corruption after the resource boom began.

Higher resource dependence

Due to a lack of government transparency, it is difficult to fully establish how dependent Venezuela is on its oil revenues, except from a collection of different sources. Oil production has been Venezuela's main export since 1917 (Mähler, 2011, p. 589). Moreover, 63% of sources of revenues (average) between 2004 and 2009 came from oil revenues (Rodríguez, et al., 2012, p. 11). Data from 2009 indicated that oil exports in Venezuela generated around 80% of the country's total export revenues, about 50% of the government's income and about one third of the country's GDP (Alvarez and Hanson, 2009; see also Mähler, 2011; Miranda, 2016). In 2014, 95% of the country's revenues came from oil (López Maya, 2014, p. 74). These numbers portray that Venezuela has been dependent economically on natural resources for almost a 100 years, and this dependency increased steadily over after 2003.

Politically, Chávez' government also became dependent on oil revenues. PDVSA and the Central Bank (BCV) supported his presidency by donating revenues to the National Development Fund, FONDEN (*Fondo Nacional para el Desarrollo Nacional*) (Howard-Hassmann, 2015). Between 2004 and 2013, PDVSA and the Central Bank transferred $115 billion, which were mostly used for social missions, but the use is not fully transparent (Vera, 2015, p. 564). Furthermore, Chávez announced in 2006 that the government would take a majority stake in projects of "strategic associations" and in 2007, subsidiaries of PDVSA were created including services, agriculture, shipbuilding, construction and industry (Alvarez & Hanson, 2009). In addition, in 2006, Chávez nationalised the oil fields, leading to the government's shares presenting 60% of all oil projects (Alvarez & Hanson, 2009). Control of the oil fields allowed Chávez to give revenues "to friends while keeping it away from foes" (Corrales & Penfold-Becerra, 2007, p. 103). This spending of oil revenues and complete control over FONDEN allowed Chávez to keep his political power by allying the poor classes of Venezuela to himself (Mähler, 2011; see also Corrales & Penfold-Becerra, 2007; Miranda, 2016; Howard-Hassmann, 2015).

Not only has the Venezuelan government depended internally on its oil revenues, but also for its foreign policy. For Caribbean countries Chávez provided oil at preferential prices (Alvarez & Hanson, 2009; Howard-Hassmann, 2015). For example, in a deal with Cuba, Venezuela sent oil barrels in exchange for Cuban doctors (Hammond, 2011, p. 368). The *Barrio Adentro* programme was based on this deal to help poorer sectors of Venezuela receive medical attention (Fraser & Willer, 2016). Furthermore, Venezuela depended on its oil revenues to finance its military expenditures. In 2006 and 2008 it signed military and economic deals with Russia to buy weapons, which were paid for with oil revenues (Wolland, 2006; Carroll, 2008).

A hint at Venezuela's dependence on oil was dropped in 2009 when international oil prices fell drastically. This caused economic troubles in the country, which were only masked by the high oil prices of 2008 (Alvarez & Hanson, 2009). This in itself already shows how unstable and susceptible to external oil price changes Venezuela's economy was at that time. This problem will become clearer when looking at feature three and how Venezuela's economy declined over the years.

However, it must not be forgotten why Chávez carried out all these changes (FONDEN, majority stakes in oil projects, social missions, etc.). Incentive for relying primarily on oil revenues was the political unrest of the early 2000s. It showed Chávez that there were still parts of the population who did not want him as their president. Thus, Chávez employed different means to increase support and his power. One such method was the social missions (among others). These improved living standards for many people living in poorer sectors of Venezuela and inspired them to vote for Chávez. Thus, the political instability caused instability on Chávez' hold on power which increased dependence on oil revenues as Chávez used them to appease the population. Diagram 3 at the end of this feature includes that important factor which greatly influenced the development of the dependency on Venezuela's natural resources.

Higher corruption

Corruption also increased during the resource boom. "The oil factor [...] contributed indirectly to the long-term degradation of the political institutions and the decline in their efficiency through widespread corruption and clientelism." (Mähler, 2011, p. 604) Table 2 shows how Venezuela's Corruption Perceptions Index (CPI) changed since 2005. Besides a small decrease in 2010, corruption has increased.[2] Other sources show similar patterns of increased corruption (see Rodríguez et al. 2012, p. 16).

Year	CPI (out of 100)
2002	25
2003	24
2004	23
2005	23
2006	23
2007	20
2008	19
2009	19
2010	20
2011	19
2012	19
2013	20
2014	19
2015	17
2016	17

Table 2: *Venezuela's CPI 2002-201 (Transparency International, 2016)*

While Transparency International's index is based on surveys asking for citizens' perception on corruption in the country and does not necessarily portray real corruption levels, it is still useful for understanding the experience of corruption within a country. Additionally, there are various examples of corruption due to resource abundance in Venezuela. PDVSA is known for high corruption within its ranks. "PDVSA has been dogged for years by corruption ranging from lucrative smuggling of heavily subsidised fuel to kickbacks and bribery." (Reuters, 2017) In 2016, American businessmen pleaded guilty for bribing PDVSA officials to secure energy contracts (Reuters, 2017). This is not the first time this has happened. Investigations against PDVSA revealed that between 2004 and 2014, $11 billion of PDVSA's

[2] The lower the number, the higher is the perceived corruption.

funds went missing (Venezuela Intelligence Unit, 2016; Ulmer, 2016). Furthermore, the social programmes started by Chávez, possible only through oil revenues, caused corruption, patronage and political favouritism (Rodríguez, et al., 2012, p. 24). In addition, the government created special non-transparent funds which are free of legislative oversight, and in 2005 were believed to hold more than $15 billion from oil revenues (Corrales & Penfold-Becerra, 2007, p. 106). As long as the people benefitting from the corruption voted for Chávez, he granted them impunity (Corrales & Penfold-Becerra, 2007, p. 107; El Universal, 2010). Alternatively, corrupt officials were removed from their posts but not held accountable (Coronel, 2006).

Corruption did not only increase in relation to oil. Transparencia Venezuela and an investigative journalist found 400 tons of medicine which had been left to expire between 2010 and 2014 instead of being distributed to hospitals which were suffering from medicine shortages (Transparency International, 2015). The government also used legislative power to resolve commercial conflict problems; companies were expropriated when the government could not find an agreement with them (Cárdenas García, 2011, p. 244). Additionally, in 2005 the Supreme Court purchased land for $12 million (official exchange rate) for the construction of buildings to house the courts of Caracas. However, to this day nothing has been built and it is not clear where the money went to (Transparency International, 2015). Further cases of corruption occurred with the government's 2010 foreign-exchange regulator *Cadivi*: individuals were able to make great amounts of money through illegal import schemes (such as creating fake companies), as the black-market exchange rate was over five times the official rate in 2010 (The Economist, 2013).

The CPI table shows that corruption increased in Venezuela after 2005 and the examples above support this argument. Nonetheless, corruption has been part of Venezuela for a very long time (Villasmil, 2008; Coronel, 2006) and it is difficult to claim that the resource boom around 2005 caused corruption for the first time. Thus, the resource boom can only claim to have worsened the situation of a quite corrupt country.

Additionally, the political instability of the 2000s played a role as to how corruption increased, similar to how it influenced the dependence on natural resources. The government faced a lot of opposition and has since then moved to using corruption, impunity from corruption and job discrimination as ways to stay in power (Corrales & Penfold-Becerra, 2007, p. 108). This gives rise to another adaptation of the model of chapter 3. Diagram 3 visualises this adaptation for both natural resource dependence and corruption.

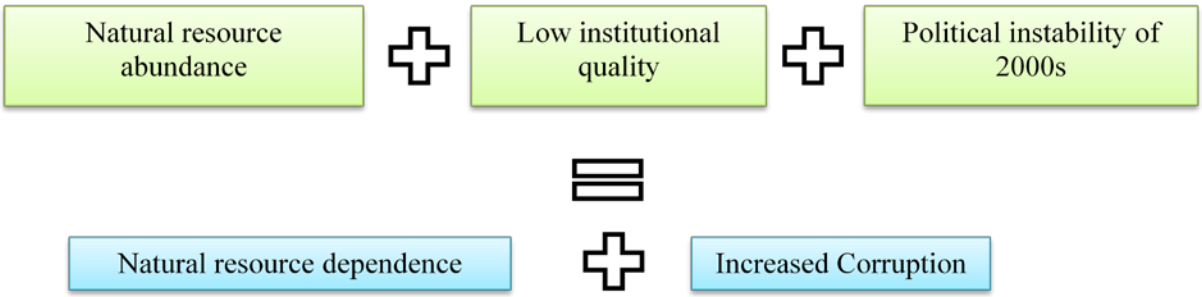

Diagram 3: *Visualisation of the new connection between abundance, institutions and political instability in Venezuela, created by author*

c) Feature 3 – Venezuela's economic decline

This feature discusses how increased dependence on natural resources and increased corruption can negatively influence economic growth within a country. Even though it is difficult to obtain recent data on Venezuela's economy, the following numbers paint an accurate enough picture of the situation.

After the 2009 global economic crisis, Venezuela's economy was able to recover. In more recent years, the country has however experienced stagnation. Exports have been decreasing at an annualised rate of -11.7% since 2010: while exports were at $93.2 billion in 2010, in 2015 they were at $34.3 billion (OEC, 2015).[3] Annual GDP growth in Venezuela was -19.5%

[3] Due to lack of government transparency and reduced publication of official numbers by the Venezuelan government, other sources have been used to find economic numbers. The Observatory of Economic Complexity (OEC), the source where this data was taken from, is a project which puts together economic data from various countries. Their data is provided by UN COMTRADE, a repository of official data from the United Nations. The OEC is thus deemed reliable enough. Additionally, the decrease in exports (the trend – not the exact numbers) was also supported by data found on the website of the Office of the United States Trade Representative (USTR, 2016).

(non-oil sector) and -12.7% (oil sector) in 2016 (Reuters, 2017). At the national poverty line, 33.1% of the population were living in poverty in 2015 (World Bank, 2016). Other sources claim that poverty reached almost 80% of the population in 2015 (The Economist, 2016).

Natural resource dependence caused lower economic growth in Venezuela due to various factors. For one, Venezuela fell victim to the Dutch disease, increasing demand for imported goods and rendering national production uncompetitive. As the currency was overvalued, inflation increased, which led to higher prices (Wilpert, 2003). Imports and government expenditures rose with oil prices (Vera, 2015). National production decreased due to this (and other reasons seen below). This situation is similar to the resource booms Venezuela experienced in the 1930s and 1970s. During them, many people living in rural areas decided to move to urban cities to gain a piece of the "oil pie" (Rossi, 2011: 13; see also Wilpert, 2003; Purcell, 2017). A "dual structure" was created, where the focus of the economy lay on exporting hydrocarbons; the revenue would then be used to ensure the (low) productivity of the other economic sectors (Dachevsky & Kornblihtt, 2017). Even though PDVSA was nationalised in the 1970s, not much has since changed about this "dual structure" (Dachevsky & Kornblihtt, 2017: 79; see also López Maya, 2014). History has repeated itself and the internal market in recent years showed signs of lower productivity and "in need of transfers from the other sector [oil] in order to function" (Dachevsky & Kornblihtt, 2017, p. 79). Additionally, most of the population actually received that "oil pie" piece in the 2000s because Chávez' administration began to redistribute the state's oil wealth to the population through social missions. This temporarily alleviated poverty and inequality. However, it also made the population dependent on the government, and 'killed off' any entrepreneurship in the country, further reducing production in agriculture and other industrial sectors (Rossi, 2011, p. 14). This shows that there are various sub-steps between natural resource dependence and economic decline, some of which were discussed shortly as a possibility in chapter 3 (Dutch disease), but not expanded on or included in the visualisation of the original model. Diagram 4 below shows these sub-steps and how the original model should be expanded.

In addition, even though there have been attempts to diversify the economy, it was and still is primarily focused on oil exports to generate revenue (Mähler, 2011; Hammond, 2011). Venezuela's natural resource dependence made any effort at diversification futile. Only with international help was the country able to recover from the GDP drop caused by the 2002 and 2003 strikes (Alvarez & Hanson, 2009). Similarly, economic troubles of 2009, which clarified

Venezuela's reliance on oil revenues, were only resolved because oil prices rose again shortly after. But nothing had been done to diversify the economy and ensure that Venezuela's economy would survive another oil price drop. The productive sector began to fall apart due to price and exchange controls, expropriations, nationalisations, regulations and increasing government spending, in addition to mismanagement (Alarcón, et al., 2016; Hammond, 2011). The government put off decisions, and rather increased social spending when elections came up in 2010, 2012 and 2013 (Alarcón, et al., 2016, p. 27). Venezuela's economy was already in a bad shape and when oil prices dropped from $105.87 to $96.29 in 2014 and then to $49.49 in 2015 (Statista, 2017), Venezuela's economy staggered even further (Vera, 2015, p. 554). Venezuela's dependency on oil exports and revenues made the economy extremely vulnerable to outside shocks. Diagram 4 below visualises this problematic between dependency, what it lead to and the vulnerability to oil price shocks.

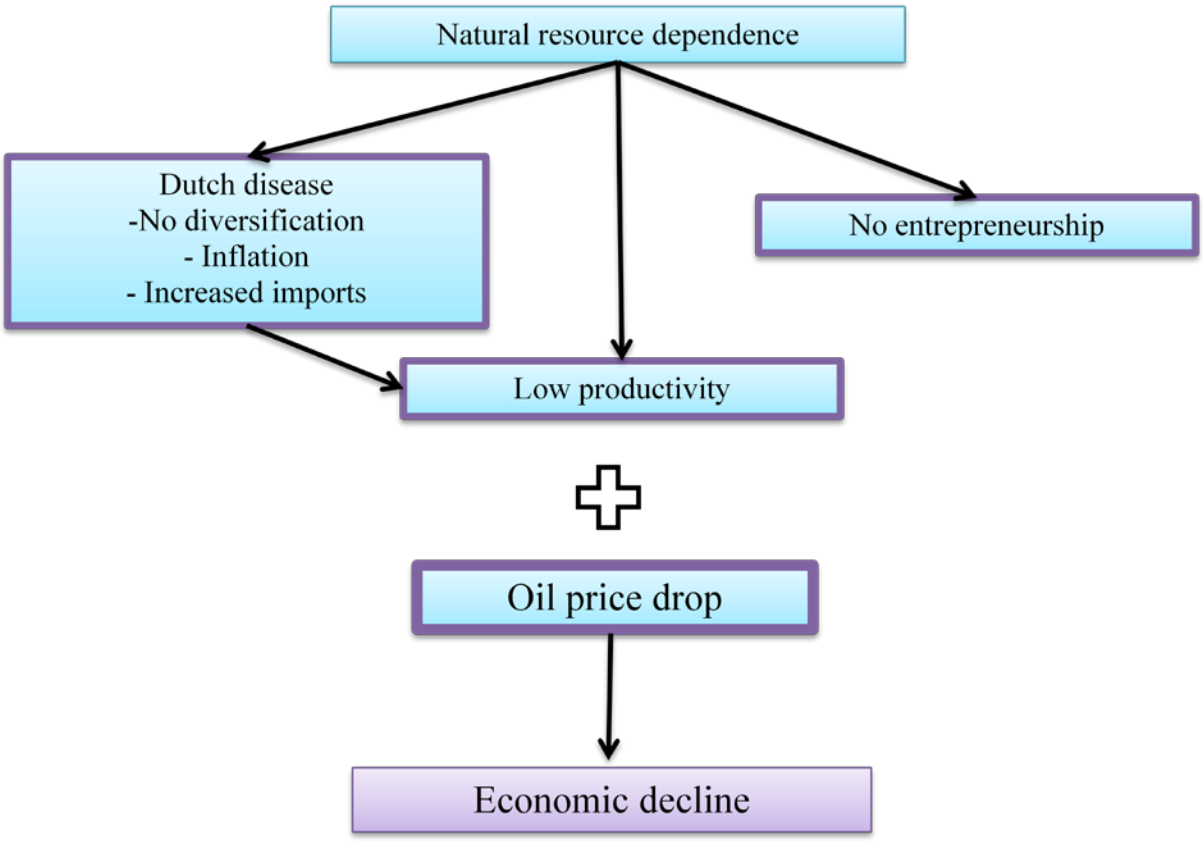

Diagram 4: *Visualisation of sub-steps between natural resource dependence and economic decline in Venezuela, created by author*

Additionally, corruption also worsened Venezuela's economy. As was explained in the previous feature (chapter 5b, feature 2), Venezuela's large oil resources led to increased corruption as managers and officials were capturing oil rents. Oil rents were preferentially used for private consumption and, due to low institutional quality and the willingness of these people to show their loyalty towards Chávez' administration, they were free to do as they please with the oil rents. This has meant that the oil rents, instead of being available for reinvestment, have gone into private pockets. While some of the oil rents have clearly gone to reduce social needs, these missions were used to gain more supporters and caused further corruption amongst officials (Faria, 2008; Howard-Hassmann, 2015). PDVSA's revenues, for example, were invested in said social programmes. In 2007, PDVSA spent $14.4 billion on social programmes, in contrast to $6.9 billion spent on them in 2006.

Additionally, rent-seeking "creates bias toward unproductive activities" (Hammond, 2011, p. 350) and lead to mismanagement, and reduced extraction and exports of oil. The clearest example of mismanagement occurred after the events of 2003, when Chávez fired around 60% of PDVSA's employees, a lot of who held managerial positions (Corrales & Penfold-Becerra, 2007, p. 102). In the years after 2003, Chávez filled the positions with people loyal to him so as not to risk further strikes. These new employees were not trained, which led to inefficiency in production, even though a resource boom was occurring in the country. Additionally, investments in technological upgrades, equipment replacement and maintenance were postponed (López Maya, 2014, p. 74). Productivity was also reduced in other sectors, such as steel, cement, electricity, communications and foods, after the government expropriated companies in those sectors in 2010 (Rossi, 2011, p. 15).

All in all, PDVSA's productivity and managerial capacity suffered greatly and this influenced Venezuela's oil exports, its number one source of revenue. With decreased revenue, the government has not been able to continue its expenditures as before and the economy has suffered. This in turn reduced economic output, further worsening economic growth. Moreover, the oil price drop of 2014 further exacerbated the situation. Corruption may already have been weakening Venezuela's economic stability (as shown by chapter 3), but the oil price drop pushed it over the edge. Similarly to the path from dependence to economic decline, the corruption-economic decline connection thus had various sub-steps in the case of Venezuela. Diagram 5 shows these sub-steps.

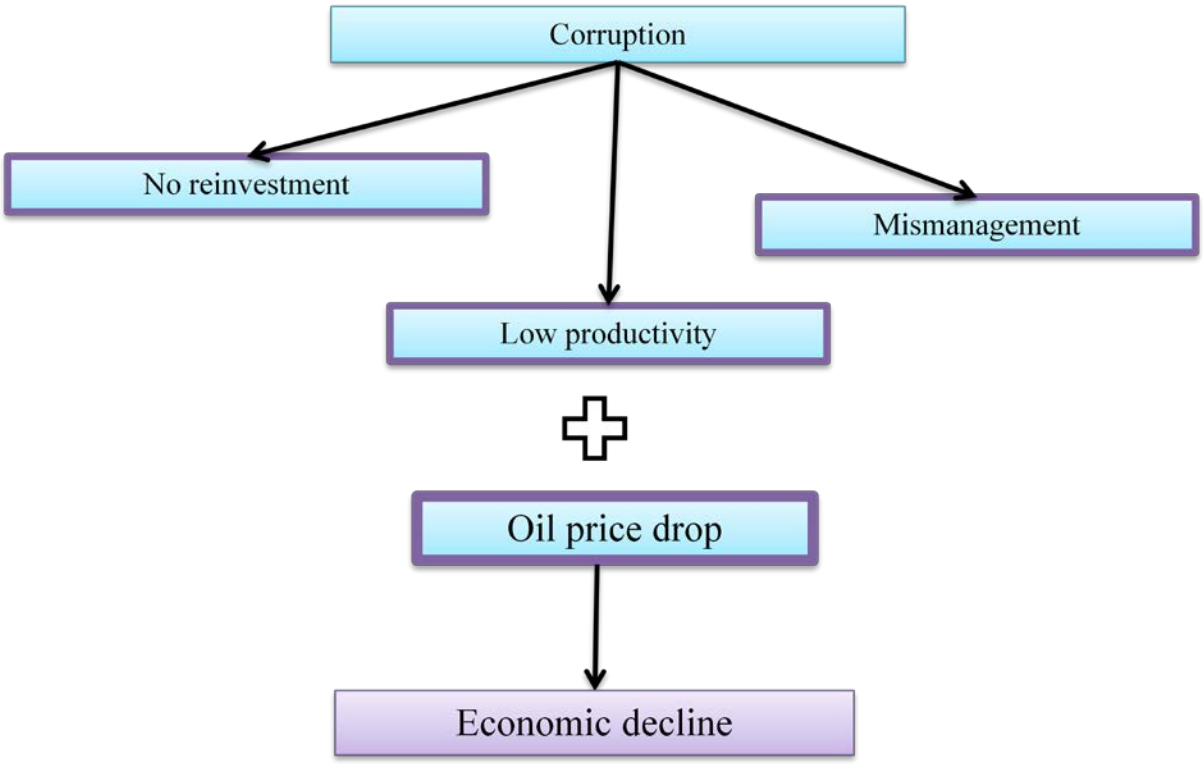

Diagram 5: *Visualisation of sub-steps between corruption and economic decline in Venezuela, created by author*

These sub-steps between natural resource dependence, corruption and economic decline (diagrams 4 and 5) have shown the stability of the economy was strongly affected by mismanagement of Venezuela's natural resources. Below are other factors which also reduced the country's economic growth. While they may seem like alternative explanations for the economic decline, Venezuela's natural resource dependence and corruption also played a role here.

For one, a foreign policy enacted in 2000 has cost Venezuela much revenue. In said year, Chávez and Cuba's Fidel Castro signed an "integral cooperation agreement" in which Venezuela agreed to supply Cuba with hydrocarbons for 15 years at subsidised prices (Coronel, 2006, p. 12). This bought Venezuela Cuba's loyalty at a time when Chávez' power in the country was not yet secured, and in combination with the programme *Barrio Adentro*, Cuba sent doctors to Venezuela's poorer sectors. However, Cuba often delayed payment, but Venezuela did not interrupt the supply (Coronel, 2006). Even though this deal was decided upon before the resource boom, it influenced Venezuela's economy for the long-term and

well into the 2010s. Considering the increasing oil prices, Coronel (2006) calculated that Venezuela was making a loss of more than $500 million per year through their deals with Cuba. Considering that the deal continued after 2006, one can imagine how much more loss Venezuela was making in recent years. Even though the deal has not been renewed since 2016, the damage to the Venezuelan economy, in combination with the other factors mentioned here, is already done. Diagram 6 below depicts that long-term relationship between the above mentioned factors. This point is not directly related to the dependence on natural resources, but rather to the existence of natural resources in Venezuela and the political stability of the 2000s. Chávez created the missions such as *Barrio Adentro* to support the population, and Chávez needed the support of his Cuban neighbours to establish support on the continent.

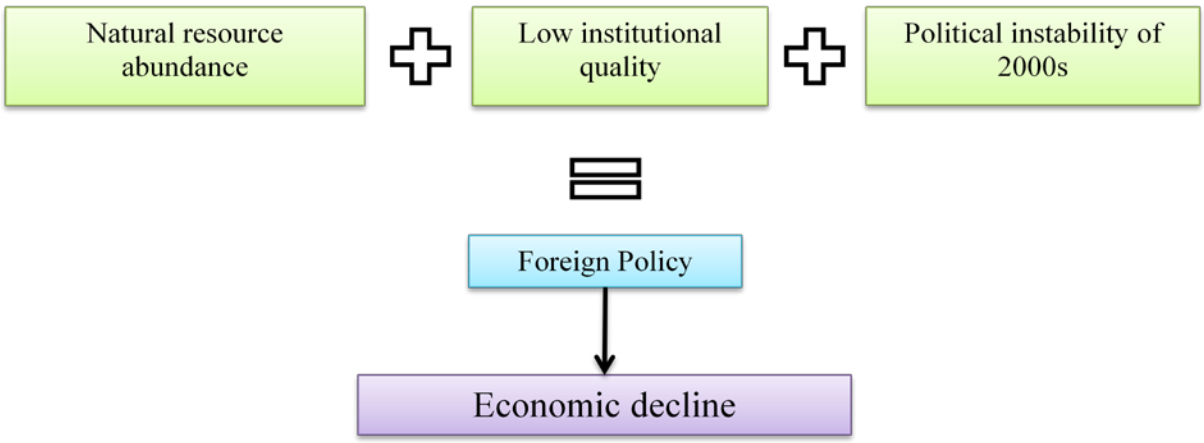

Diagram 6: *Visualisation of the role of foreign policy in economic decline in Venezuela, created by author*

Additionally, once the economy was deteriorating, the government fell into debt trying to keep the economy afloat, resulting at a fiscal deficit at 20% of GDP at the end of 2015 (World Bank, 2017). Moreover, to finance the deficit from the missing oil revenues, the government started printing money (World Bank, 2017). This has led to hyperinflation, in addition to the inflation caused by the Dutch disease. Additionally, price controls and exchange rate controls and the collapse of the private sector to provide goods (see below) have also contributed to inflation (World Bank, 2017). In 2015, inflation was recorded at 181% (Alarcón, et al., 2016, p. 27). Interestingly, after further research online, it becomes clear that there is much

discrepancy between Venezuela's inflation numbers: IMF reports inflation hit 274%, Venezuelan consultancy Ecoanalitica argues it was 525%, the New York-based investment bank Torino Capital that it was 453% (Reuters, 2017), and CATO institute reports an inflation of around 190% (Hanke, 2017). Nonetheless, inflation was and continues to be high.

Moreover, Maduro's administration introduced policies which have further aggravated the situation. One of these policies is the continued fixing of the exchange rate to control the amount of foreign currency entering the country (Venezuela Intelligence Unit, 2016; Alarcón, et al., 2016). Since 2010, Venezuela has had three different exchanges rates: the official exchange rate (at 10 BS/$) for food and essential products, the preferential exchange rate (714.98 BS/$ on 19 April 2017 (Simadi.Today, 2017)) for travels or electronics, and the unofficial black market exchange rate (at 4,283.17 BS/$ on 02 May 2017 (DolarToday.com, 2017) and 6,108.97 BS/$ on 01 June 2017 (DolarToday.com, 2017)[4]). The different exchange rates have negatively influenced the economy. "[I]mporters frequently inflate the price of their invoices in order to obtain as many dollars as they can." (Venezuela Intelligence Unit, 2016) These dollars can then be exchanged on the black market at the parallel exchange rate. To be able to get the import exchange rate, however, importers offer bribes to officials holding the dollars, further increasing corruption in the country. This cycle is difficult to break. Moreover, the setting of the exchange rate has also reduced production and agriculture in the country as it made it easier (in addition to the effects of the Dutch disease) to import goods instead of producing them domestically (Petkoff as cited in Rossi, 2011: 15).

In addition, Maduro continues to keep price controls up (Alarcón, et al., 2016, p. 27). His argument is that poorer parts of the population are not able to buy products to secure their living due to high prices. This is a continuation of Chávez' policies to help poor Venezuelans. However, due to inflation the effect of this is that producers are making losses by selling at regulated prices, as those prices are lower than the price of production. As will be seen in feature 4, this greatly affects food security within the country. Either producers stop producing completely or they start selling on the black market to make their business profitable (Purcell, 2017, p. 310). Even if producers are able to import their raw materials

[4] DolarToday.com is a news and media company which focuses on economics of Latin America. It is best known for publishing the parallel black market exchange rate for the Venezuelan currency. Its reliability cannot be proven, but considering it nationwide, though illegal, use (Pardo, 2017), it is deemed acceptable to use here. Additionally, it should be mentioned that accessing the DolarToday.com website is not without problems. At times, the website is blocked and browsers cannot load the site. DolarToday.com has responded to this problem by offering alternative links, but these can only be found after searching for them explicitly.

from abroad at the preferential official rate, the rate gives incentive for further corruption. Economic decline and the government's reaction to it led to more economic decline through the economic policies. This is visualised in diagram 7.

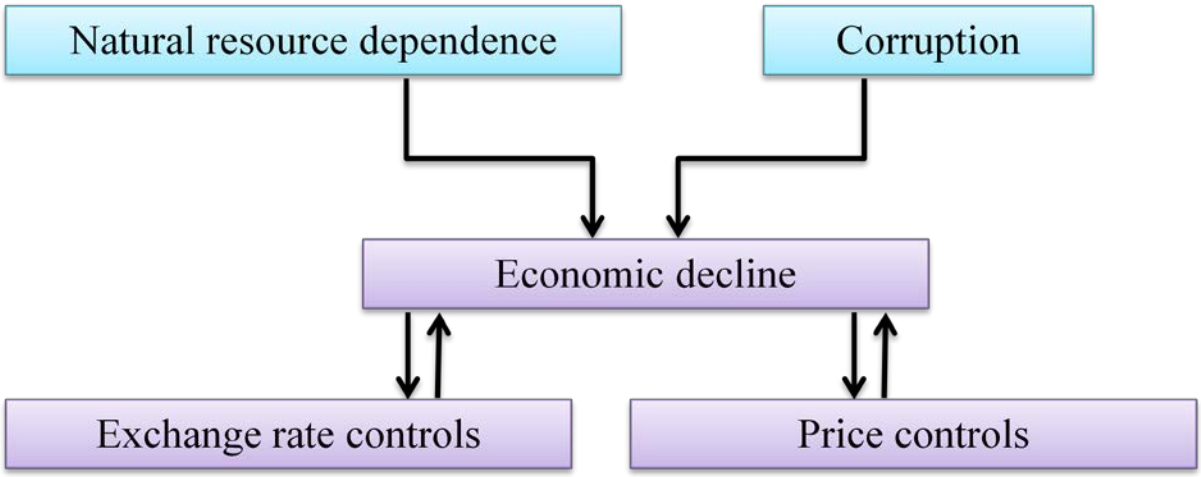

Diagram 7: *Visualisation of the impact of economic policies in Venezuela, created by author*

As has become visible from this analysis, Venezuela's economy declined sharply due to various reasons, some of which were not explicitly included in the original model of chapter 3. Thus, the model needs further adaptation, as shown in the small diagrams throughout this chapter. The political instability of the 2000s, foreign policy, price and exchange rate controls, etc., also influenced the economy. The factors mentioned in this feature may show alternative explanations as to why the economy declined, but they arose primarily due to the resource dependence and the growing corruption in the country.

d) Feature 4 – Dimensions of food insecurity in Venezuela

As was shown by feature 3, Venezuela's economy has stagnated in recent years. Natural resource dependence and increased corruption have caused regression in the country. The four dimensions of food security discussed in chapter 3 will now be looked at, as well as how lower economic growth led to a reduction of them. Economic decline leads to less revenue, less production, fewer investments, lower living standards and higher unemployment and these in turn influence the four dimensions of food security. The "how?" will be discussed below. This will simultaneously portray Venezuela's food insecurity situation. Such as for feature 3, there are alternative explanations for the worsening of any of the four dimensions connected to natural resource abundance which is not economic decline. These will be looked at after analysing the influence of economic decline. There may also be other explanations as to Venezuela's increased food insecurity, which are not connected to natural resources – but since the goal of this dissertation to find a connection between these two research areas, these other explanations are not regarded here.

Availability

Venezuela is dependent on food and medicine imports for its population. In 2014, 65% of its food products and manufactured goods were imported (López Maya, 2014, p. 74). Venezuela's government has relied on oil exports to finance the food imports, and when oil prices decreased, less revenue was available for said imports. Additionally, Venezuela is also dependent on parts and raw materials for its production plants as well, and with reduced revenues for imports, Venezuela has not been able to import the necessary parts and raw materials to keep production going (Rossi, 2011, p. 13). This has led to even less food production, which is already relatively low. For example, Empresas Polar's production of corn flour used for *arepas*, one of Venezuela's daily dishes, declined by 25% between 2004 and 2012 (Howard-Hassmann, 2015, p. 1044). Similarly, rice production in the state of Portuguesa has declined by 34% in the same time span (Purcell, 2017, p. 310; Howard-Hassmann, 2015). The reduction of production and of food occurred because the government became reliant on food imports. As was shown above, natural resource abundance led to the Dutch disease, which led to economic decline, which in turn crowded out other sectors of the

economy. One such sector was agriculture. Venezuela's agriculture declined as it became cheaper to import goods instead of producing them.

In addition, the economic policies that have been decided upon to try to improve the economic situation, such as fixing prices, have forced producers to reduce their production, as production costs are higher than their revenues. Raw materials are only available at non-regulated prices (Purcell, 2017, p. 309) As described in feature 3, this has led to producers going to the parallel market to sell at parallel exchange rates to make their production profitable (Purcell, 2017). Alternatively, producers started committing more land to the production of goods which they do not have to sell at subsidised prices, causing more scarcity in staples such as rice and corn flour (Purcell, 2017, p. 309; Howard-Hassmann, 2015, p. 1036). Moreover, the fixing of the exchange rate caused a revaluation of the Venezuelan currency, which further supported imports and "diminished the incentives of internal production and non-oil exports. The result has been a significant contraction of [...] agriculture and livestock" (Pettkoff as cited in Rossi, 2011: 15; see also Purcell, 2017).

Additionally, cases of corruption have also caused reduced food availability. Between 2007 and 2008 tons of food were bought for $2.24 billion, but only around 25% of the food was received by the Venezuelan people – the rest was found rotten (Transparency International, 2015). In other instances more rotten food was found, such as the case of PDVAL (*Productora y Distribuidora Venezolana de Alimentos*), a state-company responsible for the redistribution of imported food. The case occurred in 2009 when more than 20,000 tons of discomposed food were found, which PDVAL had failed to distribute (El Nacional, 2013; López, 2010). Reasons for this are poor bureaucracy, bad management and lack of constant electricity (Primera, 2020). During Maduro's time as presidency, similar situations occurred as food rotted in inefficiently-run ports (Howard-Hassmann, 2015, p. 1044).

Chávez tried to overcome these effects through different missions, such as *Misión Zamora* which aimed at redistributing land and reducing *latifundios* (large landed estate holders) (Mielnik, 2008, p. 594) or *Misión AgroVenezuela* to improve agriculture (Purcell, 2017, p. 305). However, both missions lacked success because of the weak legal infrastructure related to title registry (Mielnik, 2008, p. 597) or limited reach and corruption (Purcell, 2017, p. 305), respectively. In more recent years, President Maduro has tried to launch his own missions, one of them being *Gran Misión Abastecimiento Soberano y Seguro* to reduce shortages of food and medicine, and to improve the industrial sector (Barboza & Puche, 2016; Maduro,

2016). However, considering there has been little positive change in the situation of Venezuela, this mission has not been successful.

This analysis has shown that availability in Venezuela is interlinked on many different levels. The arguments of reduced imports, economic policies and lower production are mostly connected to economic decline. The other factors (dependence on imports) occurred due to a connection to natural resource abundance. Diagram 8 below shows these connections. Once again, they are mostly sub-steps between natural resource abundance, dependence, corruption, economic decline and availability. The model of chapter 3 needs to be expanded with these sub-steps for the case of Venezuela.

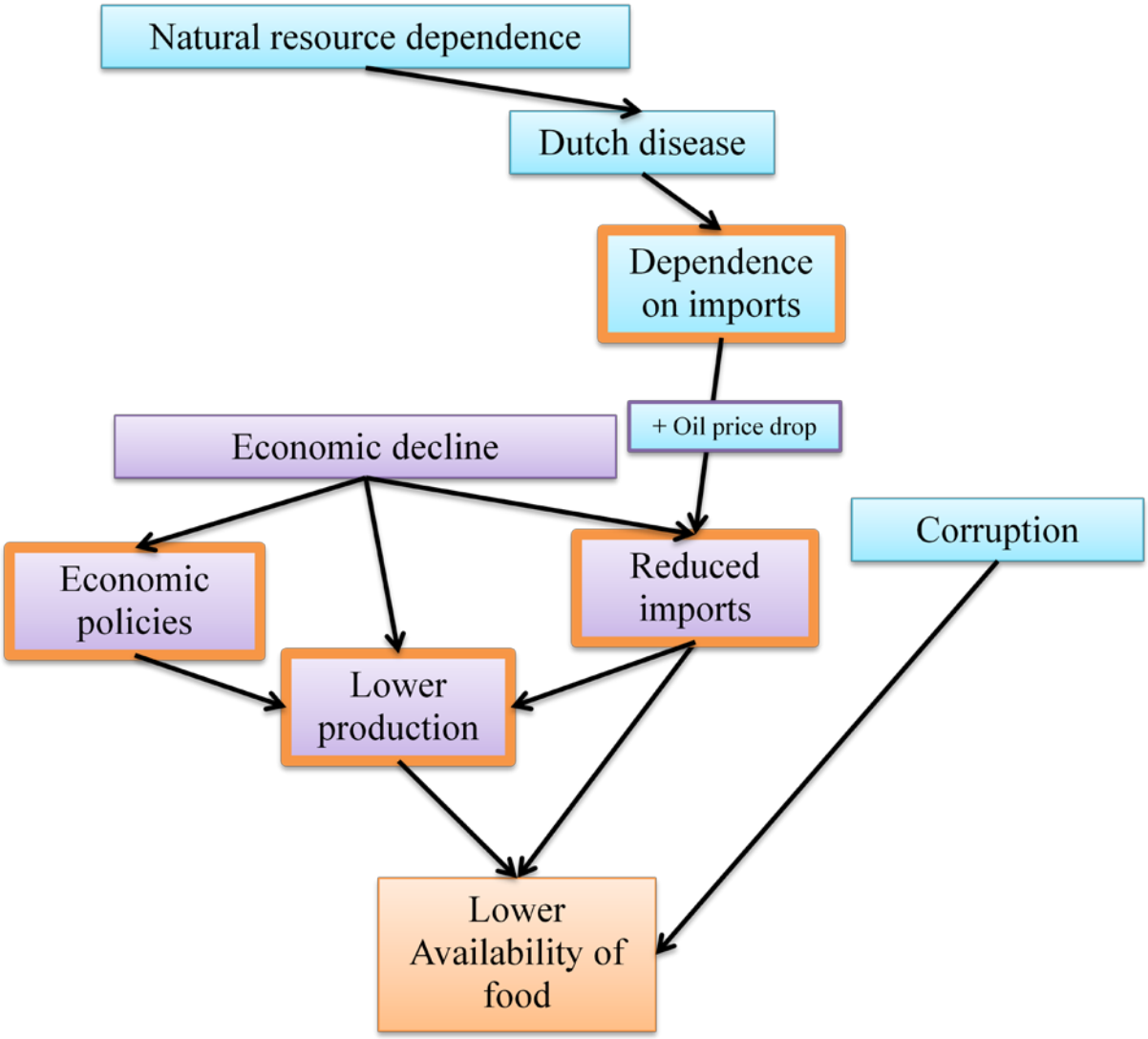

Diagram 8: *Visualisation of additional factors which influence food availability in Venezuela, created by author*

Access

It is important to note that Venezuela did not experience immediate economic decline after the resource boom of the 2000s and did thus not immediately experience problems of access with regards to food. Chávez' policies with regards to reducing poverty (such as his *misiones*) worked at the beginning and poverty was reduced to 23% in 2012 (in comparison, poverty in the 1990s was at 50%) (Vera, 2015, p. 543). The missions targeted the poorest in deprived neighbourhoods (Daguerre, 2011, p. 841). The main missions were *Barrio Adentro, Mercal,* and *Madres del Barrio*, which aimed at attending health care needs, providing basic alimentation through subsidised foods, or transferring cash for single mothers, respectively (Daguerre, 2011, p. 842). Other missions were for example *Vuelvan Caras*, which sought to reduce unemployment in Venezuela (Daguerre, 2011, p. 844). However, *Vuelvan Caras* was a failure, as many projects launched by this mission were not economically viable, and were managed by people who did not have managerial experience (Daguerre, 2011, pp. 844-845). Nonetheless, the missions were overall able to reduce poverty and inequality in Venezuela.

When oil prices dropped and the economy with them, the missions suffered. Poverty and inequality have since risen again, causing a reduction of purchasing power in poorer parts of the population. It is difficult to get official numbers, as for example the World Bank does not have any statistics in this field on Venezuela after 2006. Instead, reliance on information from media is necessary. In 2017, apparently 82% of Venezuela's population lives in poverty (Trombetta, 2017).

If goods are available, people often face various barriers to purchasing them. Either the goods are extremely expensive due to hyperinflation and people cannot afford them, or they have to wait hours in line at government regulated stores to get the products at regulated prices (Reuters, 2015). The government has tried combating the lower purchasing power of the population by increasing wages every few months (El Nacional, 2016; El Universal, 2017). However, considering the inflation rate and the already high prices of goods, producers and sellers are finding themselves forced to increase their own prices to be able to pay their workers. In May 2017 the minimum wage was raised to 65,021 BS (Bolívares) (El Nacional, 2017). At the official exchange rate, this is worth $6,502, which in itself may sound like a lot. However, considering that the majority of goods are sold at the black market exchange rate, the minimum wage is worth around $15 at the parallel exchange rate of the time (DolarToday.com, 2017). While there is government regulation that workers also receive an

additional 135,000 BS ($31 at parallel exchange rate) for food (El Nacional, 2017), it is still not enough, especially considering the increasing inflation and that, for example, a kilogram of rice costs 7% of the minimum wage (February 2017) (Telemundo51, 2017).

Another attempt to increase purchasing power has been to subsidise food for certain parts of the population, for example through the issuing of CLAP bags (bags of subsidised food distributed among people who register for them). However, as mentioned above, this has caused production of goods to become inefficient and results in losses for the producers (El Universal, 2017). Thus, production is reduced, resulting in less availability of food, increasing prices and reducing access. Additionally, the subsidised prices have created a new job for many people – *bachaqueros* – people who stand for hours in line to buy various products, and sell them on the black market for much higher prices, depending on the parallel exchange rate (Barbarani, 2016; Lafuente, 2016). Venezuelans have found ways to try to make ends meet, and for many becoming a *bachaquero* is the only way to feed their families, as richer Venezuelans tend to not stand in line to buy subsidised foods. In addition, the state company *Agropatria*, responsible for the improvement of the food security situation in the country, "has been identified as an institutional expression of 'bachaqueo', manipulating the access to key inputs outside regulated prices for private gain." (Purcell, 2017, p. 310) This in turn also increases prices.

All these additional factors which played a role in the case of Venezuela are depicted below, in diagram 9. The original model of chapter 3 must be extended once again to give more detailed steps between the original steps given in chapter 3.

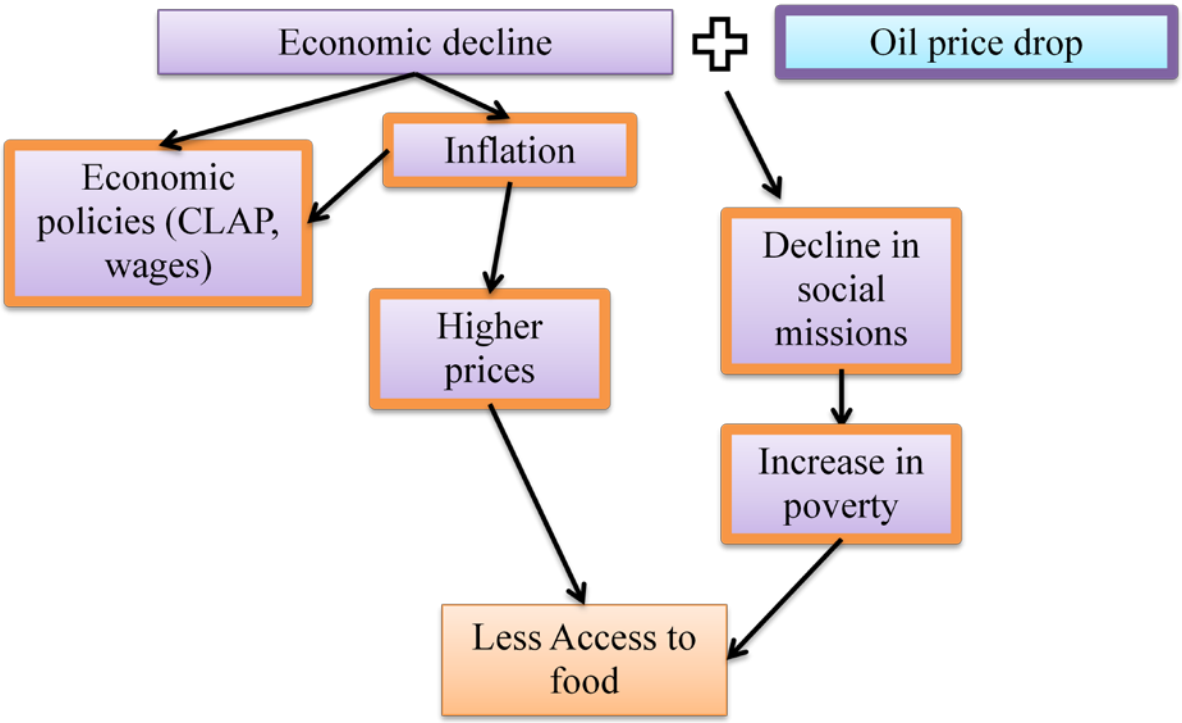

Diagram 9: *Visualisation of additional factors which influence access to food in Venezuela, created by author*

Utilisation

Poverty caused by low economic growth has lowered living standards for many people. Due to the bad economic situation, young doctors and health professionals are seeking better opportunities to work outside of Venezuela, leaving the country with a shortage in doctors (Fraser & Willer, 2016). On top of this, Cuba recalled their doctors from *Barrio Adentro* at the end of 2016 because of failed payments, which may have been caused by lower economic growth. Utilisation of food in Venezuela is also influenced by what is available on the market. When citizens find food and have access to it (both influenced by the state of the economy), their diets tend to be nutritionally imbalanced. It is not that Venezuela's citizens do not know how to eat nutritiously; rather the problem is that a nutritious diet is not possible with the food available. Instead, the food that is consumed is quite calorie-rich and based on the corn-flour made *arepas* and lacking in protein and vitamins (Brodzinsky, 2016).

In addition, the doctors Cuba sent to Venezuela for the *Barrio Adentro* mission (which was created through resource revenues) claimed to have been forced to fake statistics so as not be

refused payment (Wyss, 2017). The doctors had to reach a certain amount of patients treated each day, which meant medicine should be used on those patients. However, more often than not, not enough patients came, and to cover their tracks, Cuban doctors threw away medicine they had reported as used in the fake statistics (Wyss, 2017). This fraud has led to shortage in the long-run.

In addition to worsening infrastructure, doctors and nurses are forced to turn away patients due to lack of medicine and materials (Fraser & Willer, 2016). "The country is haemorrhaging doctors, essential medicines are scarce, maternal and infant mortality rates are up, and tropical diseases like malaria spread unchecked." (Fraser & Willer, 2016, p. 947) A survey carried out in 2016 showed that out of the hospitals questioned, 76% did not have enough medicines, and 81% reported a lack of medical and surgical materials (Fraser & Willer, 2016, p. 947).

Once again, the model of chapter 3 should be adapted, as seen in diagram 10.

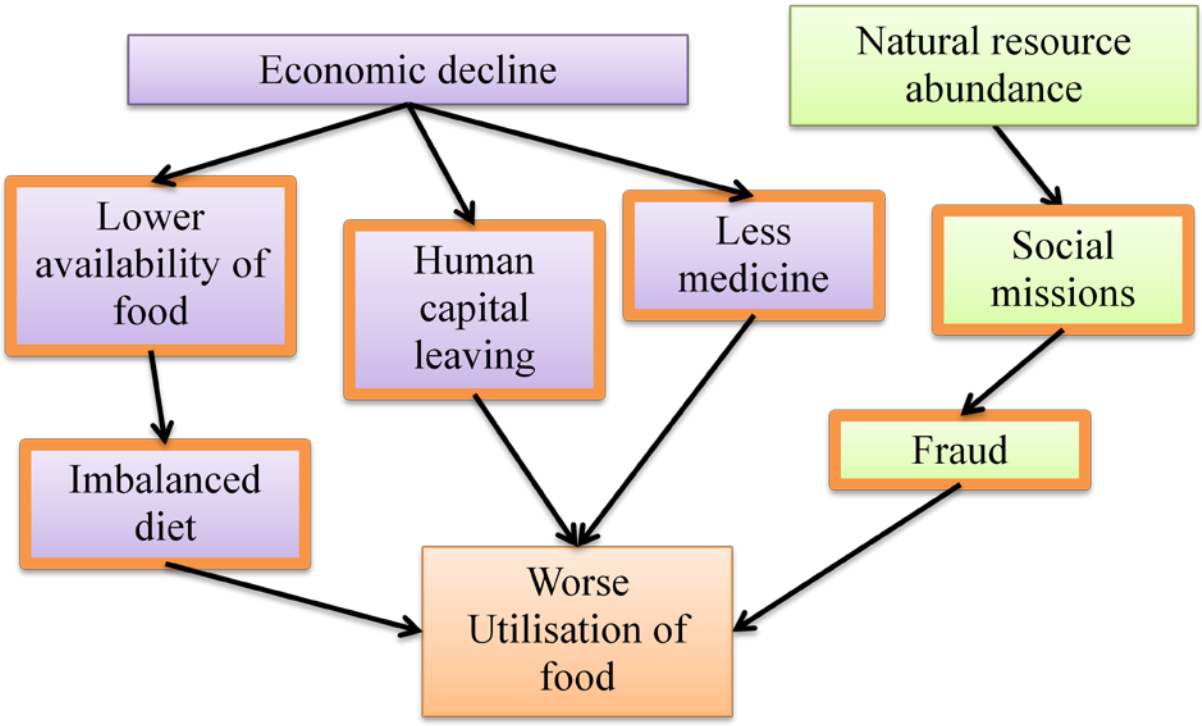

Diagram 10: *Visualisation of factors which influence utilisation of food in Venezuela, created by author*

Stability

The economic decline and instability, plus the decline in availability, access and utilisation of food, have caused great political instability. In 2014, protests erupted in the country due to violence, inflation and the shortage of goods (BBC News, 2014), costing 43 people their lives (Marco, 2017). Even though the opposition was able to win majority of seats in the 2015 parliamentary elections, the political situation is not more stable (Brodzinsky, 2015). In March 2017 the opposition started demonstrating again and has not stopped since. The opposition is protesting against the government, against the National Constituent Assembly, for the liberation of political prisoners, for accepting humanitarian help and for elections (El Nacional, 2017). On the other side, the government wants to change the constitution and argues that the opposition is using violence to gain power (PSUV, 2017; PSUV, 2017). It is a difficult situation and internationally, governments and organisations have spoken out against the violence erupting during the protests (El Observador, 2017). These protests have again cost 74 people their lives (as of 21 June 2017) (El Universal, 2017). This has further reduced stability in the country, both in the economy and in politics.

The instability has worsened the availability of food, the access to it and proper utilisation of it as the government and the opposition focus on a fight to outs the other. It is unclear what will happen now. The Supreme Court of Justice's decision in March to take the National Assembly's powers (a move that caused the beginning of the protests), has been taken back. But the opposition, which controls the National Assembly, believes this to have been a coup d'état (Torres, 2017). President Maduro called for a new constitution to reduce corruption and solve Venezuela's problems (Silva, 2017). This has been met by even more protests as the opposition believes he will try to increase his government's powers (El Universal, 2017). The stability of the country is greatly affected by the stability of the economy. At the same time, the availability, access and utilisation of food also influence general stability. It is a "back-and-forth" relationship.

As can be seen from this analysis, lower economic growth was the main reason availability, access, utilisation and stability of food decreased in Venezuela. While the original model of chapter 3 showed a simple connection (natural resource abundance → economic decline → food insecurity), this analysis showed the variety of sub-steps that occurred in Venezuela between each individual step. These steps will be summarised below in the evaluation of the model.

Venezuela's food insecurity

Overall, food insecurity has been a problem in Venezuela for many generations and it started especially after the first oil boom, as Venezuela's dependency on oil revenues grew. While oil prices were high, enough food was imported. However, when the oil price fell, food insecurity soared. As is seen in this sub-chapter, food insecurity continues to be a problem in Venezuela and it has greatly worsened in recent years. Not only is there a scarcity of available food, but access to it is reduced as well because of hyperinflation, and utilisation of food has worsened as diets are one-sided. Moreover, the political and economic instability is causing more instability in the first three dimensions of food insecurity, further worsening the situation.

Reports of the Ministry of Health in 2016 published that Venezuelans were suffering from worse health than in the years before. Infant death rates increased more than 30% compared to 2015 and death rates in mothers rose more than 65% (Contreras, 2017). As argued by looking at the utilisation of food, this is due to lack of resources, trained personal and medicine (Contreras, 2017). Similarly, endemic diseases have spread more around the country, such as diphtheria (Contreras, 2017), malaria and Zika (Ulmer, 2017).

Even though the government has tried to distribute food (CLAP bags), the long rows of people waiting to buy food at subsidised prices have not been reduced (El Universal, 2017). What cannot be found in subsidised supermarkets is available in smaller shops at black market exchange rate prices, unaffordable to those with minimum wage (Falco, 2016). Unsure of their future, women in Caracas have opted for sterilisation – to fall pregnant in a situation as such would be difficult as it is unclear whether food security will increase (Ulmer, 2016).

A study carried out by Caritas Venezuela at the end of 2016 showed that 52% of the children they monitored showed signs of malnutrition, 25% showed extreme malnutrition, and 28% were at risk of becoming malnourished in the future (Egui Brito, 2017). The situation in Venezuela has been described as a humanitarian crisis (Egui Brito, 2017), and former UN Secretary-General Ban Ki-moon offered assistance to Venezuela should the government declare a humanitarian crisis (Fraser & Willer, 2016). But when the National Assembly declared a humanitarian crisis of health, the government did not agree (BBC Mundo, 2016). In March 2017, the National Assembly refreshed their declaration, and the government continued to reject it (Meza, 2017). The next weeks and months will show whether any changes can and will be made.

e) Evaluation of model

As has become clear, the model created in chapter 3 is able to explain the situation in Venezuela, showing how oil exploitation led to food insecurity, on a simple level. The weak institutional quality before the resource boom of the early 2000s led to a dependence on the natural resource. Both corruption and natural resource dependence led to economic decline in Venezuela, which caused a reduction in food production and in food imports due to less available revenues. The simplicity of the framework established in chapter 3 allowed the analysis of Venezuela's food insecurity problem. It showed how the abundance of natural resources led to food insecurity in the Latin American country through all of the steps portrayed in the model.

However, the original model does not portray the whole situation. There was and is much more going on than what the model accounted for. The model of chapter 3 simply stated that resource dependence and corruption can lead to economic decline, which in turn leads directly to a lowering of the four dimensions of food security. The application of the model actually showed that there are many more sub-steps to be accounted for between the major steps. Moreover, economic decline alone did not lead to a reduction in the four dimensions of food security. There are instances in which natural resource abundance, dependence and corruption also directly led to a reduction in any of the four dimensions. It must therefore be concluded that while the model is applicable, its simplicity does not account for the steps in-between or for the direct connection between resources and food insecurity. The model is thus primarily useful at the start to understand a country's situation of natural resource abundance and food insecurity. While the simplicity of the model is a strength – it allows for broad application and general understanding of the situation – it does not provide a deeper analysis, as it focuses only on specific aspects and simple causalities. Still, the original model should not be discarded. It allowed for a guided analysis on the situation of Venezuela, which then opened doors for a deeper and more thorough analysis, including other factors as well.

Thus, diagrams 11-13 depict the model adapted to the case of Venezuela. As can be seen, it is much more complicated. Attempts to combine all the three diagrams into one, while successful, were not understandable as most of the lines would cross each other – any kind of overview was lost. Therefore, these three diagrams will provide a clearer understanding of the paths that connect natural resource abundance and food insecurity, focusing in turn on various sub-steps. The diagrams are a summary of the smaller diagrams shown throughout this

chapter and therefore not all the points will be explained again. The political instability of the 2000s played an important role in how Venezuela developed in the following years and led to many problems within the country. After Chávez had fired 60% of PDVSA's workers to ensure there would be no more national strikes and to reduce political instability, PDVSA's production did not recover. Even though the positions were filled and production increased, it did not reach pre-strike levels, especially since the new workers were mostly untrained. This point is particularly important in the case of Venezuela as it influenced how Venezuela became dependent on oil resources: through missions to reduce political instability and gain support; through the creation of parallel institutions, all financed by oil revenues, etc. Natural resource abundance in combination with low institutional quality alone did not lead to lower economic decline; the political instability of the 2000s influenced these as well.

Moreover, diagram 11 shows the various sub-steps between natural resource dependence / corruption and lower economic growth. As explained above (chapter 5c, feature 3), the Dutch disease (focusing too much on the oil sector and too little on other sectors such as agriculture), foreign policy and lack of entrepreneurship, in combination with lack of investment, bad management and reduced production due to corruption, plus the oil price drop of 2014 led to economic decline in Venezuela. Additionally, economic policies, which had the goal of improving the economy, backfired and actually worsened it.

Furthermore, there were various sub-steps between economic decline and a reduction in any of the four food security dimensions. For example, exchange rate policies reduced access to food, as did the increased inflation in the country. Inflation also led to higher prices and the government tried to increase purchasing power by raising wages. This in turn further increased inflation, reducing access to food even further. Doctors started leaving, medicine was scarce and social missions declined, worsening the health care situation. Economic instability caused political instability, which worsened the other dimensions. These are just some of the factors, as described in feature 4 and shown in diagram 12. Even in this simpler diagram (as compared to the combination of diagrams 11-13), many lines cross. This shows how complicated the situation of food insecurity in Venezuela really is.

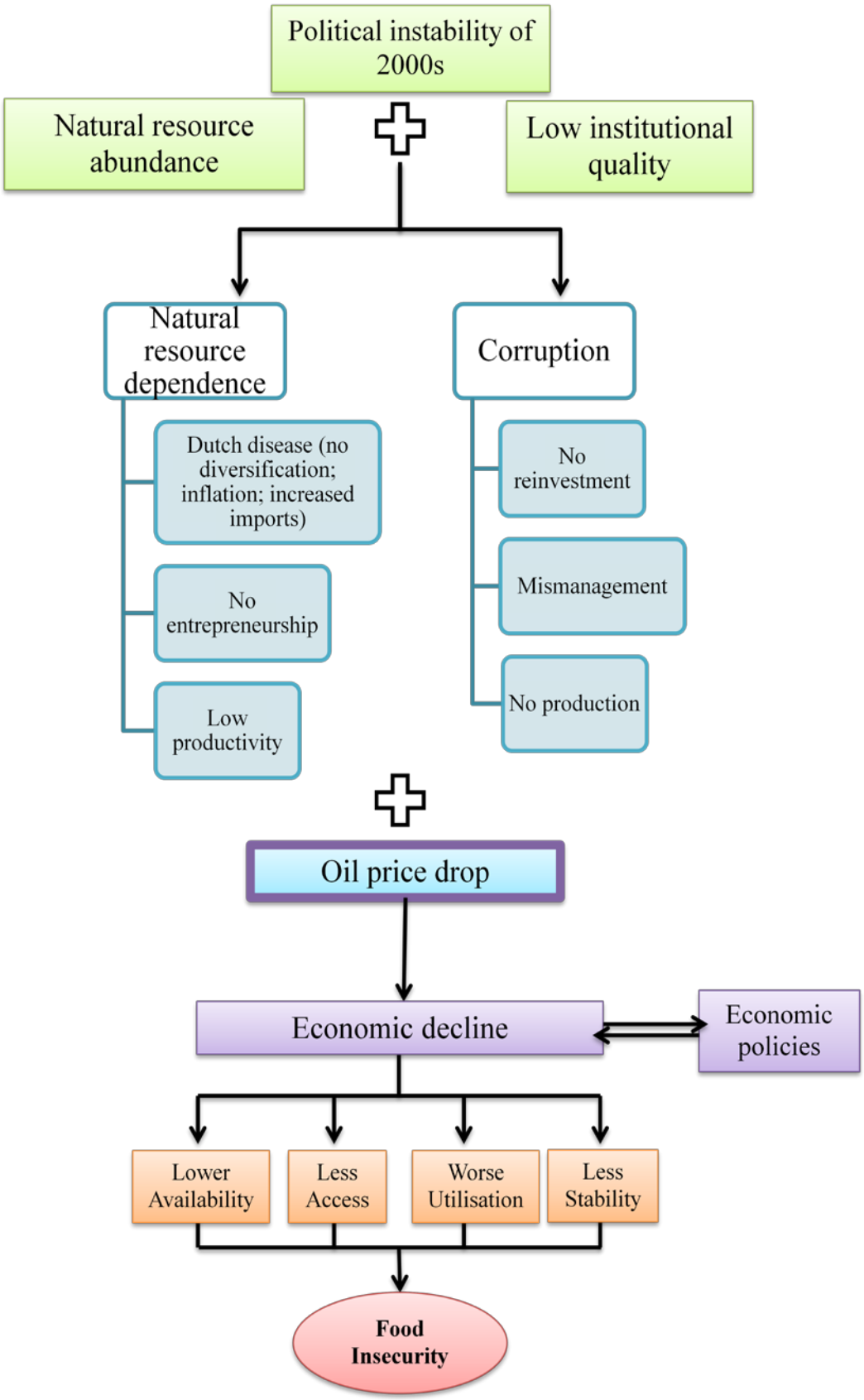

Diagram 11: *Adapted model with focus on sub-steps that led to economic decline, in Venezuela, created by author*

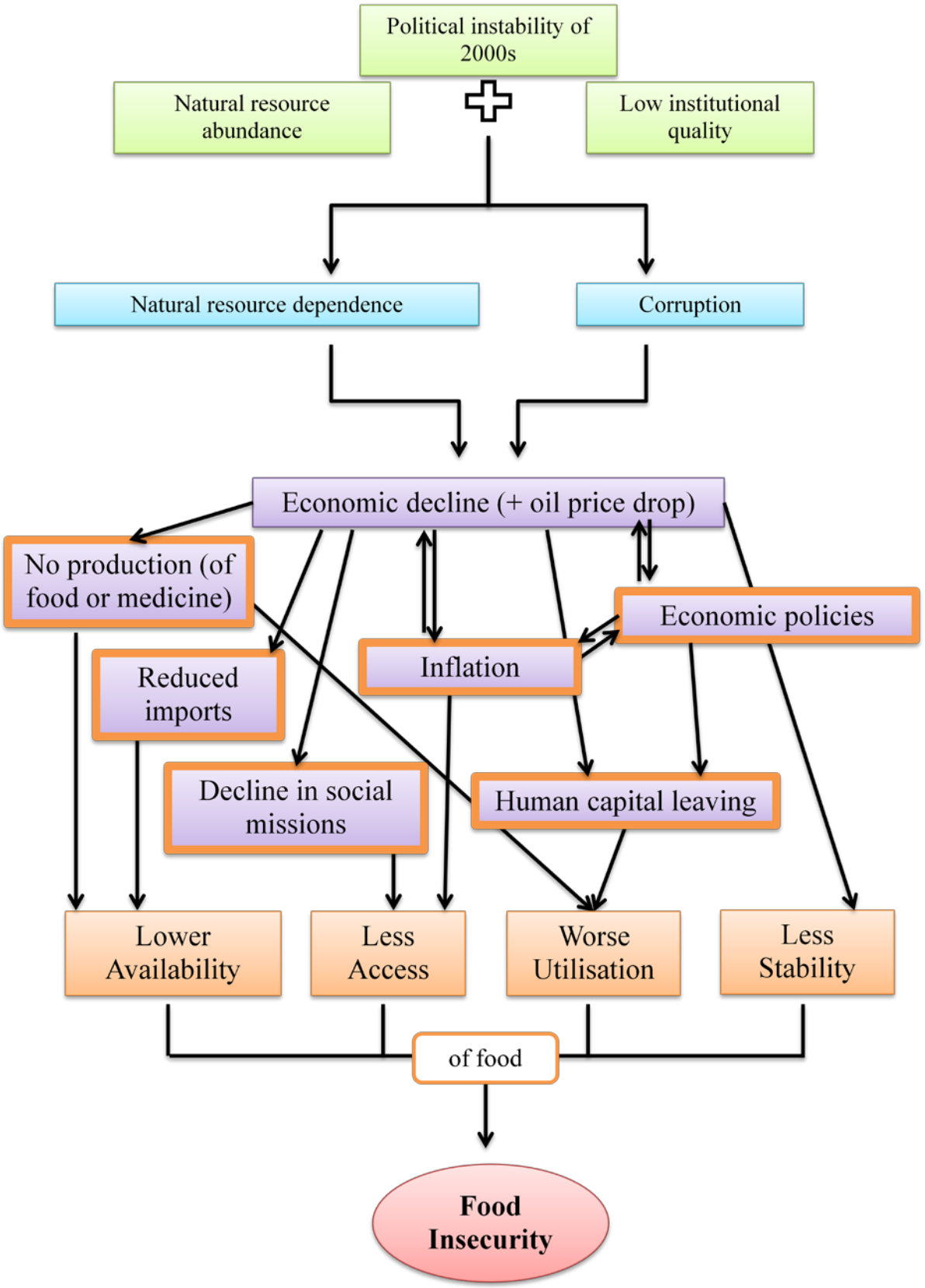

Diagram 12: *Adapted model with focus on the connection between economic decline and food insecurity, in Venezuela, created by author*

Additionally, there were cases where natural resources directly influenced food security, and not through economic decline (see diagram 13). Taking the case of availability, for example, it was also reduced by lower investment in production (due to focus on social missions and Dutch disease), increased corruption, and the oil price drop when the country's dependence on food imports became clear. Foreign policy also influenced the utilisation of food as *Barrio Adentro* caused fraud, reducing the medicine available.

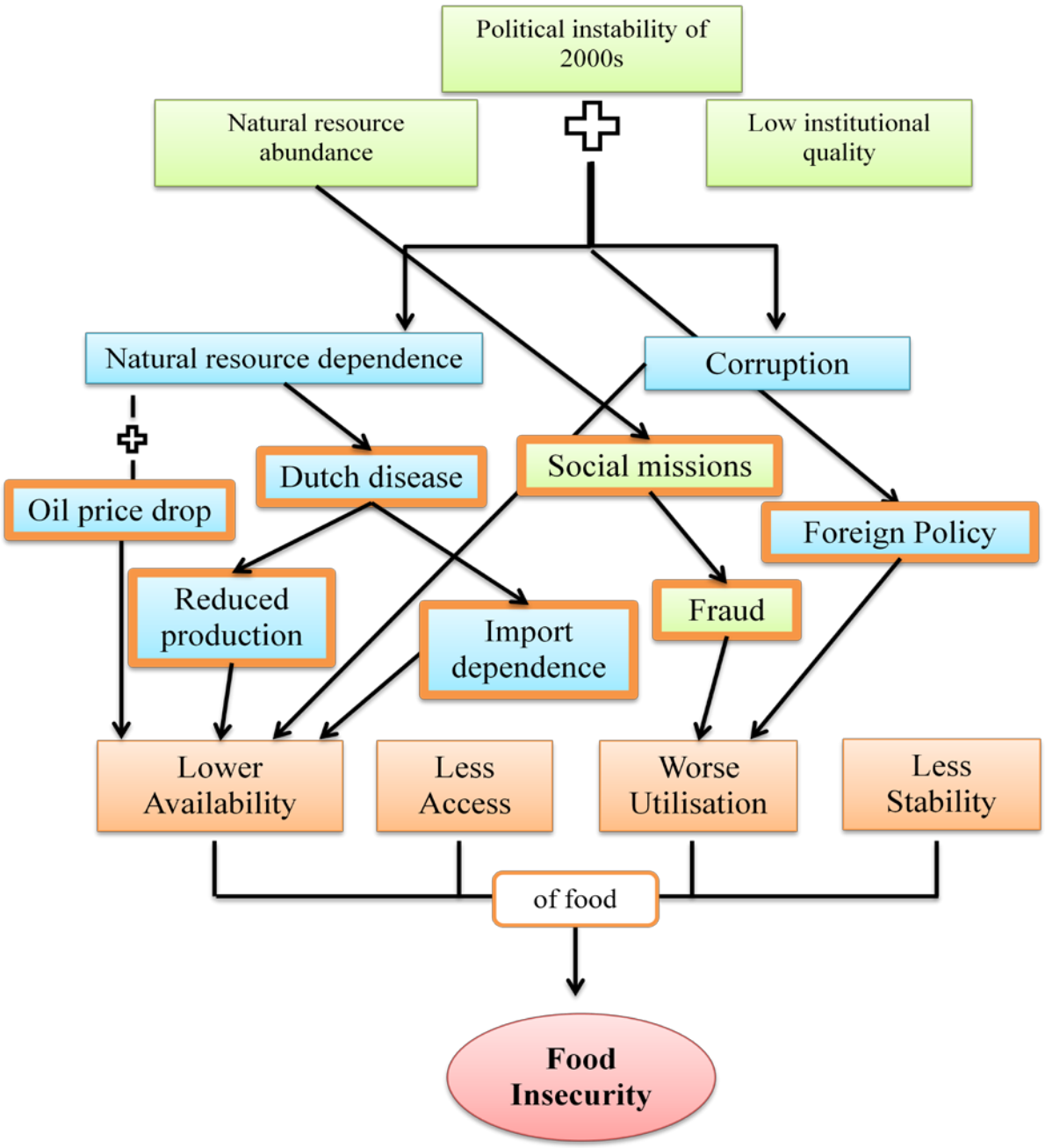

Diagram 13: *Connections between natural resources and food insecurity which are not economic decline, in Venezuela, created by author*

The only connection which could not be displayed adequately on diagram 14 was that of the interrelationship between stability and the other three dimensions. Including even more arrows made the diagram lose comprehensibility. This is why that connection was excluded here.

Another aspect which becomes clear through these three diagrams is the importance the oil price drop of 2014 has. Venezuela was already suffering economically before it, but through the drop, the economic troubles accelerated and became much more pronounced.

The model presented in chapter 3 painted a simple picture by focusing only on the direct interconnection of lower economic growth with natural resources and food insecurity. While the stability of the economy is still the main point of connection, the sub-steps are vital in the case of Venezuela, as are the other explanations which circumvent economic decline, as shown by the three diagrams above. The original model was useful as a starting point and allowed a good analysis of the situation in Venezuela; but, as can be seen, there are more factors which need to be included. Nonetheless, these factors can only be found when looking at the countries individually. The original model, since it is meant for broad application, cannot include all the factors found through the application on Venezuela. But it can open the door to an in-depth analysis, and diagrams 11-13 are proof of that.

6. Conclusion and Observations

This dissertation set out to analyse the interrelationship between natural resource abundance and food insecurity. The aim was to answer the questions of how these two areas are linked and how one can lead to the other. The relationship between these two areas has not been investigated sufficiently, as most research focuses on either one of them, but rarely on both of them together. Exceptions are found in newspaper articles or when discussing specific country cases, such as Nigeria or Laos. After an extensive literature review, four features of the interrelationship between natural resource abundance and food insecurity became clear. Natural resource abundance in combination with previous low institutional quality can lead to a dependence on natural resources and an increase of corruption. These two factors can in turn, and most probably will, lead to economic decline. An analysis of food security according to FAO's dimensions showed that food insecurity occurs when availability, access, utilisation and stability of food decrease or worsen. Closing the circle, food insecurity occurs when economic decline contributes to a lowering of any of the four dimensions. Answering the questions this thesis set out with, natural resource abundance is linked to food insecurity through economic decline, caused by an increased dependence on natural resources and corruption, if the country has weak institutional quality before a resource boom sets in. The model's applicability was then tested on the case study of Venezuela as the Latin American country has one of the highest oil reserves in the world, but is experiencing constantly increasing food insecurity.

Venezuela experienced various resource booms throughout history. This dissertation focused on the resource boom after 2003. Venezuela was in a great state of political turmoil and institutional quality was low, as shown by the World Bank indicators. Even though Venezuela's population voted in support of Chávez' government various times between 1998 and 2006, freedom of expression of the opposition was being limited to an extent; police forces were allegedly not respecting human rights; legal infrastructure and government effectiveness were failing; and Chávez created alternative state structures. This, in combination with natural resource abundance led to resource dependence and increased corruption. When analysing this aspect it became clear that the original model needed some additions for the case of Venezuela. It turned out that the political instability of the 2000s played a big role in increase the dependence on natural resources, as Chávez financed his

social missions with oil revenues to reduce political instability. This in turn also led to more corruption in the country, as people tried to receive more of the oil pie.

Natural resource dependence and corruption, in combination with the redistribution of oil, the Dutch disease, lower entrepreneurship, low productivity, lack of reinvestment, mismanagement, and the oil price drop led to economic decline. This in turn led to lower availability, access, utilisation and stability of food, through a reduction in imports, lower production of food, inflation, a decline in the social missions and economic policies. These points are all connected to economic decline. As was suspected, but could not be proven through the literature review, other factors also influenced availability, access, utilisation and stability of food, which were not connected to economic decline. Natural resource abundance, for example, also led to worse utilisation of food due to the social missions that were financed through the oil and the fraud that occurred, especially in the mission *Barrio Adentro*.

Overall, the model of chapter 3 had to be expanded to include aspects which were not thought of at first, or could not be justified through the literature review. Additionally, most of the new aspects or the sub-steps found are applicable to probably just the Venezuelan reality. The original model can thus serve as a starting point for analysis, while the application on Venezuela as a reminder that more thorough analysis is necessary to achieve a fuller picture, dependent on the case study. The model should thus be tested on different locations to improve applicability. In theory, and for the case of Venezuela, a relationship between resource abundance and food insecurity was proven. To be able to claim so in practice for other cases as well, and not only for Venezuela, more testing is necessary.

The analysis has, nonetheless, shown that one of the main points that should be addressed first to reduce food insecurity in the long-run in Venezuela is the political instability. This is even though the main "culprit" of food insecurity is economic decline. The conflict between the oppositional parties and the official government needs to be resolved, as it is causing an inability to react to other problems, such as the failing economy. This is easier said than done. As of 30 June 2017, the protests have continued for almost three months, and it is unclear which side will back down first. Considering the aggressiveness and violence of the protests, elections seem to be the only way forward, even if Maduro is not moving in that direction.

However, any political change is difficult when looking at the corruption levels in the country. A change of government, pledged to improving transparency in the country, could be

a step in the right direction. Even a new government would have to take care not to fall into old habits of corruption. The institutional bodies would have to be changed and improved. Alternatively, the current government could work on enhancing the institutions, reducing corruption and correcting bureaucracy. Both of these possibilities call for the willingness of the whole government and country to shed old practices for new ones. A change of the constitution, as President Maduro is currently asking for, may not be the best solution, even if he claims that it will reduce corruption. The call for constitutional change is being interpreted by the opposition as a move for more power and stopping it may help reduce tensions between the opposing political sides.

Venezuela must moreover start producing efficiently again, so that the country is no longer dependent on imports. This is problematic considering that a lot of production chains have been rendered inefficient through mismanagement. Equally, price controls have reduced production. It would be beneficial for internal production (and diversification) if price controls were stopped to allow producers to sell their goods at the price necessary to keep production going. The same should happen in the agricultural sector so that Venezuela stops importing main staples such as corn flour. This would at first reduce the goods available on the black market and would also increase prices of goods on the legal market, making it more difficult for poorer parts of the population to find food. To counteract this, the exchange rate should no longer be regulated, as that has led to increased corruption and higher prices. An opening of the exchange rate would reduce corruption and decrease the prices of the food sold in Venezuela. Thus, imports at normal prices would cover the shortages until production is efficient enough to feed the Venezuelan population. Of course, this does not resolve the problem of imports being cheaper than domestically produced goods. However, this is a point where the Venezuelan government would have to make tough decisions to diversify the economy and reduce natural resource dependence.

Hopefully, improvement in the abovementioned would encourage investment and thus increase domestic production of medicine and other types of food, so that illnesses can be cured and diets balanced. Equally, investments could be made in hospitals and other medical centres. This could result in many Venezuelans, which have left their country due to shortages and economic instability, to come back to invest in their country personally. Similarly, it could stop many medical students from leaving their country.

As has become clear from the model, the application of it to Venezuela and the observations, the problems in Venezuela and its situation of food insecurity are not easily solved. A combined effort must be made from all parts of the country to reverse decades of bad practice and guide the country towards improvement. However, any changes in this regard can only occur if the political problems are solved. It is also important that no matter who is in charge of the future government, they clarify that the situation might worsen before perceiving any improvement.

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