

UNIVERSITY OF GOTHENBURG
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Inequality and democracy

A quantitative study of the relationship between different measurements of
inequality and democracy level

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Abstract

This master's thesis investigates the relationship between inequality and democracy level. The research question investigated is, does inequality affect democracy? I conclude from previous literature that there is little consensus on if there is a relationship between inequality and democracy, the most widely known theories are therefore all tested in this thesis. I furthermore conclude that there is criticism towards the most used measurements of inequality and I therefore test an alternative operationalization of inequality. Furthermore, is the aspect of the affect of inequality over time missing in the literature and therefore tested in my thesis. I chose a quantitative research design and use a time series cross section regression model to test the affect of inequality on democracy level. My results show no support for the established theories. I however find that some of the alternative operationalization's of inequality produces results in the predicted way of the established theories. My results also indicate that inequality has a changing effect on democracy level over time.

Key words: democracy, inequality

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1 Introduction

Why do some countries democratize? One of the more established theories on democratization is the theory which links inequality levels to democracy. The theory broadly says that as the general population becomes relatively poorer, due to larger inequality, this will lead to an increased want for redistribution by the population. The cost for the elite to repress the population will be lower than what they would lose in a democratic system and the country therefore remains autocratic. In a more equal society however, the cost for repression would be higher than the cost for redistribution and an equal society is therefore more democratic (Boix 2003).

After a literature review I conclude that while this theory may sound simple and easy to test empirically, this has not been the case. I argue that this relationship need further investigation and the research question for my thesis is therefore: does inequality affect democracy?

I find the relationship between inequality and democracy interesting to investigate since previous literature has come to completely different results on whether there is a relationship between inequality and democratization, and what such a relationship then looks like. Furthermore, numerous studies point to the difficulty of measuring inequality and the poor quality of this measurement that many datasets have. This poor quality of the inequality measurement could lead to poor or misleading results on the effects of inequality.

Based on the issues in the previous literature I formulate three purposes of my master's thesis. I will in this master's thesis first test the main competing theories on the relationship between inequality and democracy. Second, I will introduce an alternative measurement of inequality. Finally, I will investigate the inequality affect on the democracy level over time, an aspect that is missing in the previous literature.

I can contribute to the research field by achieving these purposes, both by introducing a new take on inequality's changing effects over time and by potentially introducing an alternative measurement of inequality. The introduction of an alternative measurement of inequality that has wider coverage could contribute to making it easier for researchers of different fields to investigate the effects and causes of inequality.

The external contributions of my master's thesis mainly come in the form of understanding democratization. By using the results of my master's thesis new ideas on how to promote democracy or prevent a decrease of democracy levels might be formulated. The

introduction of an alternative measurement of inequality could as well benefit external actors by making it easier to evaluate the effect of inequality.

The outline of the rest of my thesis is as follows: I begin with a review of the previous literature on the relationship between inequality and democracy. I then state the purpose and problem formulation of my master's thesis. This is followed by a theory chapter, which also includes my hypotheses. I then present the research design of my study; this chapter includes the operationalization of my main variables and the estimation strategy. The research design chapter is followed by a presentation of my results and analysis. Finally, I present the conclusions drawn from my analysis and suggestions for further research.

2 Literature review

What leads to democratization of a country? Researches have battled with this question for a long time and there are about as many answers and theories as there are political scientists. The broad democratization literature can be divided into four main approaches; 1) *the structural approach* (modernization theory), here the actors play little role and democratization is said to follow if there is a change in the environment, for example increased wealth (Teorell 2010, p. 17); 2) *the strategic approach*, here the actors play an important role and the choice to democratize is a strategic decision made by the actors (Teorell 2010, p. 19); 3) *the social forces tradition*, here social classes will ship democracy if this is in their interest (Teorell 2010, p. 22) and; 4) *the economic approach* where economic tools are used to explain democratization (Teorell 2010, p. 24). I will in this master's thesis focus on this fourth approach to democratization, and more specifically, the literature within this approach that focuses on the relationship between inequality and democratization. I choose to focus on the approach because here both different actors and structures are thought to effect democracy. I therefore find this approach to be the most comprehensive approach.

I have divided the section of previous literature on the relationship between inequality and democracy into three parts; the first section presents the different relationships which has been found between inequality and democracy. The second section present the problem of how inequality is measured and the data that this measurement is based on. The third section presents the issue of the literature not addressing the changing effects that inequality might have on democracy over time. This section ends with a short summary of the literature.

I conclude from the literature that there is little consensus on whether or not there is a relationship between inequality and democracy, and if there is, how a relationship might look like. A summary table of the studies included can be found in Appendix A. I also conclude that several studies point out that data availability on the measurement of inequality is poor. I finally conclude that inequality is assumed to be slow changing and to have the same effect on democracy at different points in time (Bollen and Jackman, 1985).

2.1 Several contradicting findings

I have found several contradicting theories and findings on the relationship between inequality and democracy. There is in the research field little consensus on 1) whether there is a relationship between inequality and democracy and 2) how such a relationship then might look like. I first present the studies that have found no relationship between inequality and democracy. I then present papers that has found a negative relationship between high inequality and democracy. Finally, I present studies that has found the relationship to be more complex.

Several papers in the field argue that there is no relationship between inequality and democracy. If a relationship has been found is this according to Bollen and Jackman (1985) most likely due to either problem with a confounding variable, the data or a causal directional problem. In their paper from 1985, Bollen and Jackman questions the relationship between democracy and economic inequality. They argue that previous empirical studies have suffered from problems such as failure to see the bidirectional link between democracy and inequality; and that the relationship might not be linear. According to Bollen and Jackman (1985), no relationship can be found.

Muller (1988) also agree that a relationship between inequality and democracy might be in the reverse direction. Muller tests if countries that has lower inequality are more likely to democratize and find no support for this claim. However, Muller (1988) find a relationship between the stability of democracies and high inequality, where countries with higher inequality are more likely to break down after democratization.

On the same theme, Houle (2009) find that inequality harms democratic consolidation but has no effect on democratization. Houle states that his study is the first to test both theories on democratization and democratic consolidation at the same time. Furthermore, Houle (2009) argues that there are several problems with the theories linking inequality to a democratic transition since they all fail to account for collective action problems. Houle has a problem with the established theories on democratization assuming that a will for democratization always originates from below. However, are theories of the link between

inequality and consolidation of democracy more flexible. Houle (2009) use a dynamic probit analysis and find no relationship between inequality and democratic transition.

Teorell (2010) is another author who finds no relation between inequality and democracy. He investigates the third wave of democratization and tests various theories of what can explain democratization, inequality being one of them (Teorell 2010, p. 16ff). Teorell (2010, p.8) finds that low inequality does not lead to democracy. Teorell (2010, p. 60) uses the Gini coefficient¹ as a measurement of inequality and finds no effect either in the long-run or when using different model specifications.

A more recent study by Haggard and Kaufman (2012) also finds there to be no relationship between inequality and democratic transition. Their study examines the third wave of democratization between 1980-2000, mainly in post-socialist countries. Haggard and Kaufman (2012) use an alternative method compared to all other studies, a causal process observation method. By using this method can they investigate the causal process that has led countries to democratize. They find that transition to democracy happens in countries with all levels of inequality and therefore claim that there is no causal link between inequality and democracy.

Another common finding in the field of research on the link between inequality and democracy is that high inequality is associated with no democratization or low levels of democracy. Muller (1995:a) argues that high levels of income inequality leads to an unstable democratic development. Muller (1995:a) furthermore argues that there is an inverted U-shape relationship between high income inequality and economic development. The results are confirmed in Muller (1995:b) but have been criticized for not using a continuous measurement of democracy by Bollen and Jackman (1995).

The Feng and Zak paper from 1999 is another study that test what affects transitions to democracy. Their findings are in line with their theory and they conclude that democratic transition is less likely when the development level is low and the inequality level is high, as well a lack of democratic heritage seems to hinder a democratic development. In a later paper Zak and Feng (2003) argue that the speed of the democratic transition also depends on the inequality level, where higher inequality levels slows down a speedy transition to democracy.

¹ The Gini coefficient is one of the most widely used measurements of economic inequality. For further details, see page 22 in this master's thesis.

One of the most prominent authors on the relationship between inequality and democratization is Boix. He argues that there is a need to combine the economic, sociologic and game theoretical arguments to explain democratization of a country (Boix 2003, p. 10). Boix (ibid) predict that a more equal distribution in society promotes democracy. The argument made is that the pressure for redistribution from the poor decrease when a society becomes more equal. The costs for the elites will then go down since they do not have to pay that much in tax redistribution when equality is high. Boix (ibid) argues that the cost of redistribution in a democratic regime would then be smaller than the cost of repression that the rich would have to pay and a democratic regime is therefore chosen by the elite. His empirical results show that both the probability of democratization and democratic consolidation increases with a more equal society. The same results can also be seen when an extended time period from 1850 is tested by Boix (2003).

Ziblatt (2009) argues in favor of a negative relationship between income inequality and democratization. His paper is, unlike most of the other studies, a case study of Prussia in the beginning of the 20th century. Ziblatt (2009) investigates why Prussia remained autocratic during the first wave of democratization and theorizes that it might have to do with the level of inequality within the country. Ziblatt (2009) finds that members of parliament from constituencies with a high level of land inequality were more likely to vote against the suffrage bill.

The third type of finding in the literature is a complex relationship between inequality and democracy. For example, Acemoglu and Robinson (2006) and Burkhart (1997) find a U-shaped relationship, while others find a relationship that depends on how inequality is operationalized (e.g. Ansell and Samuels (2010)).

Acemoglu and Robinson (2006) theorizes that elite groups in a society with high inequality will repress the poor and not democratize due to the fear of redistribution in a democracy, largely the same mechanism described by Boix (2003). Additionally, Acemoglu and Robinson (2006) theorizes that democratization is less likely in a society with a more equal income distribution since there then will be a lack of a demand for redistribution and thereby for democracy. In societies with moderate levels of inequality is democratization most likely since it is in these societies that the elites have to compromise by redistributing and democratizing. This theory creates an inverted U-shape relationship between inequality and probability of democratization (Acemoglu and Robinson, 2000, 2001 & 2006).

Burkhart (1997) investigate the effect that income distribution has on democracy in the period 1973-1988. Burkhart (1997) argues that the relationship is reciprocal and that

causality can go in both directions. Burkhart (1997) states that the reason that previous studies have failed to find a relationship between the two variables could have to do with the assumed linearity between the variables. Burkhart instead finds, just like Acemoglu and Robinson (2006), an inverted U-shape relationship between income distribution and democracy.

Ansell and Samuels (2010) propose an additionally more complex relationship between democracy and inequality. They argue in favor of a contractarian approach. This theory states that regime change is not an effect of the elites fear of the median voter. Instead, regime change is due to fear of expropriation, in groups with a rising economic wellbeing, from the governing elites. The conflict leading to democratization is therefore, according to Ansell and Samuels (2010), the intra elite conflict and not the elites conflict with the poor. Following from this line of argument comes that inequality should have different effects on democratization depending on which asset that is unequally distributed. Ansell and Samuels (2010) argues that land inequality has the same predictions as the ones presented by Boix (2003) and partly Acemoglu and Robinson (2000, 2001 & 2006). High land inequality favors autocracy whilst low inequality leads to democracy. A difference in predictions comes with income inequality. Here Ansell and Samuels (2010) argue that a society is more likely to democratize when income inequality is higher. They build this argument on a historical review and argues that when income inequality is high, the rich people will fear expropriation by the political elite and the rich will therefore favor democracy to autocracy. Ansell and Samuels (2010) find support for their claims, both when measuring democracy as the dichotomous variable developed by Boix (2003) and when using the Polity scale².

Midlarsky (1992) use the same alternative operationalization of inequality, land inequality. He investigates the democratization of agrarian societies between 1973 and 1987. Midlarsky (1992) finds a relationship between land inequality and democracy, findings that suggest that to get a democratic process going is it necessary to initially have a high level of land equality.

Perotti (1996) instead investigates the effect that inequality has on growth and reasons behind the relationship. Perotti finds that high inequality is associated with less political and social stability which then is connected to growth. Alesina and Perotti (1996) are in a similar study finding the same results, where higher income inequality leads to social discontent which then leads to socio-political instability.

² For explanation of the Polity scale see page 20 in this master's thesis.

Dutt and Mitra (2008) builds on the Alesina and Perotti (1996) paper regarding the relationship between economic inequality and political stability. They however measure political stability as shifts between dictatorship and democracy, which they argue is missing in the Alesina and Parotti (1996) measurement. The results from Dutt and Mitra (2008) show that a more unequal society tend to move in and out of democracy, political volatility is furthermore found to lead to policy volatility which then effects output volatility, economic growth and investments.

Rueda and Stegmueller (2016) is one of the more recent paper on the relationship between inequality and democracy. They investigate one of the fundamental assumptions that both the Acemoglu and Robinson (2000, 2001 and 2006) and the Boix (2003) theories builds on, the difference in redistribution preference between the rich and the poor. Rueda and Stegmueller (2016) argues that the difference in redistribution preference between rich and poor does to some extent depend on the relative income, but for the rich does the preference also depend on the level of inequality. Rich people prefer more redistribution when the general level of inequality is high since they fear crime. The result from the Rueda and Stegmueller (2016) study suggests that the models by Acemoglu and Robinson (2000, 2001 and 2006) and the Boix (2003) needs to be revised.

To sum up, the literature presents a number of contradicting results, theories and methods. There is little, if any consensus on the relationship between inequality and democracy. This poses a problem to the research field since we then cannot get a clear picture of whether inequality cause democratization.

2.2 Problems in measuring inequality

The literature review also shows that there are concerns that could be raised with the data used, particularly when measuring the inequality variable.

Several studies points to the problems with one of the most used datasets on economic inequality: the Deininger and Squire data from 1996. Data from Deininger and Squire has been used in the book by Boix (2003) and in a number of other papers, for example Feng and Zak (1999) and Barro (1999). It could be argued that their results suffer due to a lack of representativity in the data. Houle (2009) claim that the Deininger and Squire data only cover 11% of the country years, a sample that is far from representative. Muller (1988) suffers from the same issues of validity since the sample tested only consists of 23 countries.

Houle (2009) suggest to instead uses data by Ortega and Rodriguez (2008) where around 65% of the country years are covered. This is a large increase in representation but it can still be questioned if this is enough coverage. Teorell (2010, p. 166) present an alternative data by Galbrait and Kum, from 2003, which Teorell argues has a wider coverage than the Deininger and Squire data.

Further attempts to enhance the measurement of inequality has been made by Haggard and Kaufman (2012) who measure inequality by using three measurements. They use the Houles (2009) measurement of share of income in the manufacturing sector, the Vanhanen (2003) measure of land inequality and a Gini coefficient from University of Texas Inequality Projects Estimated Household Income Inequality (EHII) dataset from 2008.

An alternative method to deal with the lack of data/the quality of data is to do case studies, see for example Ziblatt (2009) who investigate the relationship between inequality and democracy by looking at the vote on suffrage in the 1912 Prussian parliament. Problems with the method of case studies are the lack of generalizability from the results.

All in all, I find it clear from the literature review that there is a problem when it comes to measuring inequality. Even when new, better datasets are used is the coverage of country-years 65%. There is furthermore a limited way of operationalizing inequality where the Gini coefficient, land or income quintiles are the dominating measurement, little attention has been paid to other types of inequality or to try to develop alternative measurements of inequality.

2.3 The effect of inequality over time

After the literature review I find another shortcoming in the research on the relationship between inequality and democracy, the idea that inequality has the same effect on democracy at all points in time. The idea that inequality can have changing effects on democracy depending on how far back you measure inequality has not been tested in the literature, this is possibly due to the assumption that inequality does not change over time.

The assumption that the inequality level in a country does not change has for example lead to the use of the inequality level for around two years back in time as an independent variable (Bollen and Jackman, 1985). Bollen and Jackman (1985) motivate their independent variable by arguing that inequality in countries have not changed much over the last 20 years. The same line of argument is presented in the paper by Burkhart (1997).

I argue that there is need to test if this fundamental assumption made in the research field is accurate and if not inequality affect democracy differently at different points in time. Perhaps could inequality take some time to effect democracy.

Teorell (2010, p. 155) makes the observation that the effect of inequality on democracy either is investigated on a short or very long time frame and not enough research is conducted on an intermediate timeframe. I agree with Teorell and therefore argue that it is interesting to investigate the effect of inequality at different points in time.

2.4 Conclusions from the literature review

I draw several conclusions from the previous literature. Firstly, there is little consensus within the field, both when it comes to whether there is a relationship between inequality and democracy and if so how such a relationship looks like. A table with an overview of the papers included in the literature review and their main findings can be found in Appendix A.

Another observation is the critique towards the data on inequality, which is often argued to have severe flaws in the country-years covered. Most studies have investigated the time period after World War two until today and most examined countries have been western countries even though there have been attempts to expand the data.

Finally, most of these studies assume inequality to be slow changing and have the same effect on democracy over time.

3 Purposes and problem formulation

Previous literature has come to different conclusions on the relationship between inequality and democracy and the results could depend on the data available. Data on inequality is difficult to obtain since inequality is a tricky variable to measure. Furthermore, previous studies have measured inequality in a limited way and not included tests on how inequality might affect democracy at different points in time.

All these issues noted above pose a problem to the research field. Severe disagreement in the research field on the relationship between inequality and democracy leads to a confused and unclear picture of if there is a relationship between inequality and democracy. The poor data-quality on inequality that some results are based on leads me to question if the results are different since the data on inequality varies. The lack of testing how inequality effect democracy levels at changing points in time has led to the assumption that inequality has the

same effect over time. This might have limited our understanding on how and when inequality affect democracy.

In this master's thesis my purpose is threefold and based on the identified issues within the field. First, I will investigate the relationship between inequality and democracy by testing the main contradicting theories all in one thesis. I choose to test the most widely known theories by Boix (2003), Acemoglu and Robinson (2006) and Ansell and Samuels (2010) all in one paper. I thereby hope to bring some clarity on the relationship between inequality and democracy.

Second, I will test an alternative measurement of inequality. If I find a good alternative measurement might some of the data quality issues on inequality be solved which could be of use for many fields of research.

Finally, I will in this master's thesis provide an analysis over time, where the effect of inequality on democracy at different points in time is investigated. This because previous research has made a fundamental assumption on the slow changing nature of inequality and has therefore not investigated the possibility of a changing effect over time.

4 Theory and hypothesizes

This section deals with the theoretical ideas on the relationship between inequality and democracy. First, I present the dominating theories within the literature. Then, I propose my theoretical argument for an alternative measurement of inequality and the link between this operationalization of inequality and democracy. Throughout this section I present the hypotheses that I formulate based on the theories.

4.1 Main previous theoretical arguments on why inequality effect democracy

The main theoretical argument in the previous literature is the redistribution argument presented by Boix (2003) and Acemoglu and Robinson (2006), referred to in the literature review. This argument takes its departure from the median voter theorem by Meltzer and Richard (1981) which seeks to explain the relationship between the median voter, economic inequality and the want for redistribution. The argument is that there, as economic inequality increases, is an increased conflict between the elite and the poor (Boix, 2003).

As economic inequality increases, the median voter will become relatively poorer and desire increased redistribution. Since it, according to the median voter theorem, is the median voter that holds the decisive power in a democracy will this lead to an increased want

for redistribution in a society that is a democracy. This relationship is according to Boix (2003) the reason why higher economic inequality is related to less probability of democratization. The elite instead chooses to suppress the poor and the society stays autocratic. This since the elite do not want redistribution and can avoid increased redistribution by hindering a democratic transition.

Acemoglu and Robinson (2006) propose a similar takeoff point but suggests that the likelihood of democratization will be small in societies with very low economic inequality since there then is little demand for redistribution and thereby for democracy. This would lead to a U-shape relationship between economic inequality and democracy, where societies with high and low inequality should have low or no democracy whilst intermediate levels of inequality should be associated with higher levels of democracy. I, based on this theories, formulate the following testable hypothesizes:

H1a: *High economic inequality has a negative effect on democracy level.*

H1b: *There is an inverted U-shaped relationship between economic inequality and democracy level.*

When it comes to the effect of economic inequality over time the established theories are not very elaborate. Boix (2003, p. 22) argues that the economic inequality-democracy relationship is a one shot game. It is the income inequality in each generation that will affect the probability of democratic transition. It could therefore be argued that the effect of inequality measured as economic inequality should be slow-moving and have an equal effect over the duration of each new generation. The following hypothesis I therefore formulate as:

H1c: *High economic inequality has a long time negative effect on democracy level.*

Ansell and Samuels (2010) presents an alternative theoretical framework, a contractarian theory. In their theory is there a conflict between the elite and the group with rising economic wellbeing and it is this conflict that drives democratization. The group with rising economic wellbeing will be afraid expropriation by the elite and will therefore be in favor of democracy.

Furthermore, Ansell and Samuels (2010) differentiate between types of inequality, land inequality and economic inequality. They argue that different types of inequality should have different effects on the probability of democratization. A more equal society in terms of land inequality leads, as predicted by Boix (2003) and Acemoglu and

Robinson (2006), to democratization. However, is the mechanism behind this in Ansell and Samuels (2010) that landholders want representation in order to avoid taxation and expropriation of their land from the political elites. When there are a lot of landholders, meaning a more equal society, there will therefore be a push for democratization.

A high level of economic inequality is however associated with a higher likelihood to democratize. This is due to the fear of expropriation from the elites that the group with rising economic wellbeing has. A high income inequality is associated with higher likelihood of democratization since the newly rich will want democracy to avoid expropriation by the political elite, something that is more likely in a more democratic society.

According to Ansell and Samuels (2010, p. 1561) their paper investigating the long run effect of inequality both measured as economic inequality and as the land inequality on democracy. However, they do not specify how long this long run effect is. The paper by Ansell and Samuels (2010) leads me to formulate the following hypothesizes:

H2a: *High land inequality has a negative effect on democracy level.*

H2b: *There is an inverted U-shaped relationship between land inequality and democracy level.*

H2c: *High economic inequality has a positive effect on the democracy level.*

H2d: *High land inequality has a long time negative effect on democracy level.*

4.2 An alternative theoretical framework

One of my contributions in this master's thesis is the introduction of an alternative measurements of inequality; the *egalitarian democracy index* developed by the V-Dem institute in the paper by Sigman and Lindberg (2015). I argue that there is a need for an alternative operationalization of inequality since the data on both economic and land inequality is poor and not representative (Houle, 2009). The *egalitarian democracy index* is therefore in this master's thesis tested as an alternative measurement of inequality. Data on this variable is available for most country-years and the method for calculating the index is transparent (Coppedge et al., 2016a)

The *egalitarian democracy index* is composed out of two sub-indices; *the equal protection index* and *the equal distribution index*. I propose to also use the *equal distribution of resources index* and its indicators as an alternative measurement of inequality. I argue that the *egalitarian democracy index* and the *equal distribution of resources index* should be able to

function as a measurement of inequality since they measure peoples equal access to resources (Sigman and Lindberg, 2015).

The *egalitarian democracy index* and the *equal distribution of resources index* are in my thesis tested as measurements of inequality. I am testing whether they have the same mechanisms as the theories described by Boix (2003) and Ansell and Samuels (2010). However, I am not testing the theory of an inverted U-shape relationship between this alternative operationalization of inequality and democracy level, this since it is not within the scope of my thesis to as well investigate this theory. If I find these alternative measurements to work as measurements of inequality could a future step be to test the theory by Acemoglu and Robinson with this operationalization's as well.

I am aware that these indexes do not measure income inequality or land inequality as theorized by Boix (2003) and Ansell and Samuels (2010). The *egalitarian democracy index* and the *equal distribution of resources index* however measures peoples access to resources. If resources in society are more unevenly distributed should this lead to an increased want for redistribution from the median citizen. The country will be more autocratic if the resources are more unevenly distributed since the cost for repression by the elites will be smaller than the cost for redistribution that democracy means. In a country with a more equal distribution of resources will the cost for repression however be higher than the cost for redistribution and the country will be more democratic. I also assume that the measurement of inequality functions over time in the same way as has been theorized by Boix (2003).

I therefore formulate the following testable hypothesizes:

H3a: *Low inequality measured as a high value on the egalitarian democracy index has a positive effect on the democracy level.*

H3b: *Low inequality measured as a high value on the equal distribution of resources index has a positive effect on the democracy level.*

H3c: *Low inequality measured as high values on the egalitarian democracy index and the equal distribution of resources index has a long time positive effect on democracy level.*

The *egalitarian democracy index* is developed to measure a particular aspect of democracy and might therefore be highly correlated with democracy. I therefore propose to also investigate the relationship between the indicators that make up these indexes and the democracy level. The *equal distribution of resources index* is made up of seven indicators; *spending on particularistic*

or public goods; universal or means tested welfare programs; education inequality; health inequality; power by socioeconomic group; power by social group and power by gender (Sigman and Lindberg, 2015). I will in the remaining part of this section further present the theoretical arguments behind how and why the indicators in the *equal distribution of resources index* would affect democracy level within a country.

4.2.1 *Particularistic or public goods spending in budget and means tested or universal welfare systems*

The first two indicators that make up the *equal distribution of resources index* is the *spending on particularistic or public goods indicator* and the *universal or means tested welfare programs indicator*. These both indicators measures spending in the budget which benefits all communities and if the welfare system benefits everyone. A higher value means more equality.

The theoretical link between these two indicators of the *equal distribution of resources index* and democracy level can be connected to the theories by Boix (2003) and Acemoglu and Robinson (2006). Boix (2003) argues that economic inequality leads to democracy because the median citizens wish for redistribution increases with increased inequality and the elite rather suppress the public than redistribute and democratize.

If there however already is a large public goods spending and universal welfare the argument could go that there is no desire for democracy since the citizens already have access to the benefits from redistribution.

I formulate the following hypothesis based on this theory:

H4a: *A higher public goods spending and more universal welfare systems, meaning a more equal society, is associated with lower levels of democracy.*

The long-term effect of a change in the public good spending and universal welfare could arguable be that a decrease in the public goods spending immediately changes the redistribution preferences of the citizens. I should therefore see an effect of only a few years when a lower spending on public goods and less universal welfare systems are associated with an increased demand for democracy.

The hypothesizes based on this theory I formulated as:

H4b: *There is a negative effect of high public goods spending and more universal welfare systems of a few years on democracy level.*

4.2.2 Educational inequality

The third indicator of the *equal distribution of resources index* is *educational inequality*. Education and especially education level has been a part of the modernization theory of democracy presented by for example Lipset (1959) and Glaeser et al. (2007). According to the modernization theory the *level* of education is connected to democratization, where higher levels of education is associated with democracy (Glaeser et al., 2007). However, the modernization theory does not generally discuss how inequality of education within a country effects democracy.

Castello-Climent (2008) investigates the effect that equal distribution of education has on democracy level in the post Second World War period. Castello-Climent argue that a more equal education is associated with a higher democracy level. The elite in a society with more equal educational level loses political control since education always shapes people's political views to be in line with democracy. Equal education therefor leads to more widespread political opinions which favors democracy which then leads to a democratic transition.

Barro (1999) too is interested in the effect of educational inequality on democracy. He uses education inequality between men and women as one of many independent variables which could affect democracy. Barro (1999) argue that educational inequality between men and women is a proxy for general educational inequality within a country. His results indicate that more unequal education between men and women has a significant negative effect on democracy. However, Barro (1999) does no investigation of the effect over time. Castello-Climent (2008) use a five-year lag of educational inequality and finds a significant result in line with the theory.

Based on these previous studies are the following hypothesizes is formulated:

H5a: *A higher educational inequality is associated with a lower democracy level.*

H5b: *The educational inequality both has a negative immediate effect and a negative effect of at least 5 years.*

4.2.3 Health inequality

The fourth indicator in the *equal distribution of resources index* is *health inequality*. The relationship between health inequality and democracy has been investigated by for example

Ruger (2005) but then in the other causal direction, if democracy effects health inequality. Ruger (2005) theorizes that in a democracy will the ruling party want the people to be happy and content to get re-elected, a democracy will therefore have less health inequality.

Barro (1999) on the other hand studies the effect of health levels on democracy, health is in this study measured as the log life expectancy at birth. The results from Barro (1999) suggests that longer life expectancy is associated with a larger probability of democratization.

A possible link between health inequality and democracy level could be that a higher inequality in society could hinder people from participating in democratic activities and it could therefore be easier for the elite to stay in power. An alternative theoretical argument could be that unequal healthcare for all in an undemocratic society would act as a base for unhappiness and therefore spark a want for change and thereby a transition to democracy.

Based on the findings by Barro (1999) is this second line of argument disregarded and the following hypothesis formulated:

H6a: *An more unequal health care is associated with a lower level of democracy.*

There is a lack of literature and theories on the effect of health inequality on democracy over time. However, it could be argued that the effects of health are long term. It might take a long time to change a healthcare system and for this change to have an effect on the democracy level. Based on this line of argument is the following hypothesis is formulated:

H6b: *High health equality has a long time positive effect on the democracy level.*

4.2.4 *Power distributed by socioeconomic group and social group*

The fifth and sixth indicator in the *equal distribution of resources index* deals with *power distributed by socioeconomic group* and *power distributed by social group*. Theories on how power inequalities between groups effects democratization is found in for example Dahl (1971) in Haerpfer (2009, p.78). Here, the argument is that power inequality between groups leads to political inequality. Political inequality prevents democratization since all power is concentrated in an elite circle who do not want to democratize.

Vahnanen (2003 p. 24) too argues that power resources between groups translates to political power resources. A more equal distribution of political power resources is therefore according to Vahnanen (ibid) associated with a higher level of democracy. The equal distribution of power resources is a direct cause of democracy since power resources

concentrated in one group equals the survival of autocratic political structures (Vahnanen 2003 p. 154). Vahnanen (2003 p. 67) assume inequality and democracy to be a stable relationship over time and I therefore argue that the effect of a change in the power structures between groups should be a long term effect.

I have, based on these previous theories and studies, formulated the following hypothesizes.

H7a: *A more unequal distribution of power by socioeconomic group and social group is associated with a lower level of democracy.*

H7b: *High power equality by socioeconomic group and social group has a long time positive effect on the democracy level.*

4.2.5 Power distributed by gender

The final, seventh indicator in the *equal distribution of resources index* is the *power distributed by gender indicator*. Inglehart, Norris and Welzel (2002) argues that support for gender inequality is not a consequence of democratization but both are the effect of a cultural change. They argue that people both want gender equality and democracy due to a change in cultural values. Ingleheart et al. (2002) additionally argue that such a change in culture take a long time to achieve but that the effect on both these should be simultaneously.

I therefore propose the following hypothesizes:

H8a: *A lower gender inequality is associated with higher levels of democracy.*

H8b: *There is an immediate effect of gender inequality on the level of democracy.*

5 Research design

I use a quantitative approach to investigate my proposed research question. I use a quantitative approach since this is the most widely used approach in this field of literature (see for example Boix (2003), Houle (2009), Teorell (2010) and Ansell and Samuels (2010)). I furthermore want to test the theories developed and investigated in mainly papers with a quantitative research design. By using a quantitative approach, I will be able to easily compare my results to the results found in previous studies and the results that these theories predict.

In this section I present my operationalization of the dependent, independent and control variables. This section furthermore presents the data from where I get the variables, the descriptive statistics of said variables and finally motivates the chosen estimation strategy.

5.1 Operationalization and data

This section presents the chosen operationalization of the dependent, independent and the control variables. I also give the descriptive statistics of all variables, the data sources and discuss some problems associated with the data.

5.1.1 *Dependent variable*

The dependent variable in my thesis is democracy. There are many ways to operationalize and measure democracy, for example the dichotomous variable developed by Boix (2003). I will use the polity score of a country to measure the level of democracy. I use this operationalization of democracy since this is an operationalization that has been used by other studies (see for example Ansell and Samuels (2010)).

The polity score furthermore has the benefit of being a numerical variable and I can therefore use it to measure how inequality effect the level of democracy and not just the likelihood whether a country is democratic or not.

The data on the polity score variable is found in the V-Dem data set from 2016 which in turn get the data from the Polity IV dataset (Coppedge et al., 2016a). The specific variable used is the Polity combined score, a score that is calculated by subtracting the country's score on autocracy from its score on democracy. The variable varies between +10, which is strong democracy in a country, and -10, which is strong autocracy in a country.

The democracy score for a country in the Polity data is measured by using three parts, the first part is the existence of institutions thru which citizens can “express effective preferences about alternative policies and leaders” (Coppedge et al., 2016a p. 355). The second part of democracy in a country is according to Polity IV is the ”existence of institutionalized constraints on the exercise of power by the executive” (ibid). The final part of democracy is the presence of guaranteed civil liberties to all citizens. The variables measured for the democracy score of a country are; the competitiveness of political participation, the openness and competitiveness of the recruitment of the executive and the constraints on the chief executive.

The autocracy measurement measured by assessing the restriction or suppression of competitive political participation. This means that a country is said to be more autocratic if

the executives are chosen within a political elite and have few political constraints when they are in power (Coppedge et al., 2016a p. 355).

The combined polity score for a country is then calculated by subtracting the score for autocracy from the score on democracy.

Table 1. Summary statistics dependent variable

<i>Variable</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Min</i>	<i>Max</i>	<i>Observations</i>
<i>Polity score</i>					
<i>Overall</i>	0.6089	7.2814	-10	10	N = 11226
<i>Between</i>		5.5587	-10	10	n = 163
<i>Within</i>		4.7253	-16.9083	14.7210	T = 68.8712

Data retrieved from the V-Dem dataset (Coppedge et al., 2016b)

5.1.2 *Independent variables*

Just like for the democracy variable are there numerous ways to measure and operationalize inequality. According to Haughton and Khandker (2009 p. 103) is income inequality a broad concept defined over the whole population in a country. The criterion for a good measurement of income inequality is according to Haughton and Khandker (2009 p. 105 – 106) 1) mean independence, meaning that a doubled income would not change the measurement; 2) population size independence, meaning that the inequality measure will not change with a change in population size; 3) symmetry, meaning that the inequality measure should not be effected if two people switch income; 4) Pigou-Dalton Transfer sensitivity, meaning that the income inequality measurement is reduced if income is transferred from a rich person to a poor person; 5) decomposability, meaning that the inequality measurement can be broken down into for example population groups or income sources and finally; 6) statistical testability, meaning that it should be possible to test for significant changes over time.

The operationalization of inequality is one of the main disagreements within the field and previous studies on inequality has been operationalized by using very different data. Some of the more common operationalization’s of inequality are the usage of the Gini coefficient, the share of income held by different quintiles of the population and the distribution of land. I choose to operationalize inequality by using two of these most common previously used measurements, the Gini coefficient and Land inequality.

I furthermore include an alternative measurement of inequality: the V-Dem egalitarian principle of democracy and its sub-indexes, components and indicators. Further

motivation for using these independent variables and this alternative measurement of inequality can be found in the theoretical chapter and further down in this section.

5.1.2.1 The Gini coefficient

The Gini coefficient is one of the most used operationalization of economic inequality. However, studies using the Gini coefficient as a measurement of inequality has come to different conclusions on the relationship between economic inequality and democratization, see for example Boix (2003) and Teorell (2010).

The Gini coefficient is based on the Lorenz curve which is a cumulative frequency curve that can compare the distribution of for example income with a complete equal distribution (Haughton and Khandker, 2009 p. 104).

The Gini coefficient varies between 0 and 1 and as the Gini coefficient increases is this a sign of a more unequal distribution of income. The Gini coefficient fulfills the criterions for a good measurement of income inequality according to Haughton and Khandker (2009 p. 105 – 106). I therefore propose to use the Gini coefficient as a measurement of inequality.

I furthermore motivate my choice of using the Gini coefficient as a measurement of inequality by referring to previous studies. The Gini coefficient has been used in many previous studies but the data source that it has been based on has been varying, Boix (2003) has for example used the Deininger and Squire data whilst Teorell (2010) have used data by Galbrait and Kum and Haggard and Kaufman (2012) has used data from the Estimated Household Income Inequality (EHII) dataset from 2008.

I use the Gini coefficient included in the 2015 V-Dem dataset (Coppedge et al., 2016b). This Gini coefficient is based on data collected by UNU-WIDER in 2008. The V-Dem data accounts for historical missing observations by interpolation, this they argue is appropriate given the stickiness of the measurement. Missing data from the last observation up until today's data is filled by repeating the last observation (Coppedge et al., 2016a).

5.1.2.2 Land inequality

The *land inequality measurement* is an alternative measurement of income inequality, where land ownership instead of income is used. Previous studies by Ansell and Samuels (2010) have used land inequality as an alternative measurement. Ansell and Samuels (2010) used data by Vahnanen (2003) where share of family farms is estimated. A larger percent of family farm indicates a more equal distribution of land and thus a more equal society.

I argue that the land inequality measurements of family farms hold up to the criterion for a good measurement of income inequality since it is independent of mean, population size, decomposable and has signs of symmetry.

The data on this variable is taken from the V-Dem dataset and the work by Vanhanen (2003). This variable measures the percentage of cultivated land that are family farmed (Coppedge, 2016a, p.381).

The Vanhanen data is included in the V-Dem dataset, however there are a lot of missing data, the variable has therefore been interpolated so that every 10th year is included. This has been done to increase the number of observations (Coppedge, 2016a, p.381).

5.1.2.3 Egalitarian principle of democracy and its subcomponent

I propose to use an alternative operationalization and measurement of inequality, the *egalitarian principle of democracy index* developed by the V-Dem institute. The V-Dem institute proposes the use of several different aspects of democracy in order to capture this multifaceted concept, one of them being *the egalitarian principle of democracy* (Coppedge et al, 2016c).

The V-Dem *principle of egalitarian democracy* imagines that material and immaterial inequality prevent individuals to exercise their rights and liberties and thereby hinders them to participate. The *egalitarian principle of democracy* is achieved when all individuals have equally protected rights and when resources are distributed equally (Sigman and Lindberg, 2015).

The *egalitarian component index* is composed out of the *equal protection index* and the *equal distribution of resources index* (Sigman and Lindberg, 2015). It is this *equal distribution of resources index* that I argue could be an alternative measurement of inequality. The *egalitarian component index*, the *equal distribution of resources index* and the indicators does not hold to the Haughton and Khandker (2009) criteria for a good measurement of income inequality since they are not measuring income inequality but rather the equal distribution of other resources.

The data on the *egalitarian democracy index* and its components is collected from the V-Dem dataset. The variables are coded by using V-Dem country experts in combination with factual data. Advantages with using the V-Dem indexes include that the V-Dem data and principles are freely available and is a widely transparent on how and what indicators that make up the different principles (Coppedge et al, 2016c). Another advantage is that the indices can be broken down further, to indicator level and it is therefore possible to see which indicator that is driving the relationship. Another aspect that makes the V-Dem data useful is its long time

span, reaching back to 1900 (Coppedge et al, 2016c). This could deal with the problems that other operationalization's of inequality face, where only a short time frame is available and the country-years that can be investigated are somewhat ad hoc.

One concern with using the index on *egalitarian democracy index* as a measurement of inequality is the possibility of a close correlation with the dependent variable which too is a democracy measure. To address both this issue and to make additional theoretical contributions to the field is the subcomponent index of the *equal distribution of resources* and its component indicators used as independent variables.

The *equal distribution of resources index* is intended to measure the distribution of several important resources. The index is therefore created out of several indicators. These are *spending on particularistic or public goods; universal or means teste welfare programs; education inequality; health inequality; power by socioeconomic group; power by social group* and *power by gender* (Sigman and Lindberg, 2015).

The first indicator is *spending on particularistic or public goods* indicator the coders are asked to consider “social and infrastructural spending in the national budget” (Coppedge et al, 2016a, p. 195-196). More specifically it asks them to rate if spending is particularistic, meaning targeted to specific groups, regions or sectors. Public goods spending is on the other hand spending which benefits all communities. A higher value indicates more public goods spending and thereby more equality (ibid).

The second indicator is the *means tested versus universal welfare programs* indicator. This indicator asks the coders to estimate if the welfare systems are means tested, targeted to the poor population, or if they are universal, i.e. benefits everyone. A higher value on this indicator means that closer to all welfare programs are universal and thereby more equally distributed (Coppedge et al, 2016a, p.196-197).

The third indicator measures *educational inequality*. This asks the coders to estimate to what extent “high quality basic education” is guaranteed to all. A higher value indicates that close to all have guaranteed basic education and therefore indicate more equality (Coppedge et al, 2016a, p.252).

The forth indicator in the *equal distribution index* is *healthcare inequality*. This indicator measures to what extent “high quality basic healthcare” is guaranteed to all. The healthcare should be sufficient for people to be able to exercise their rights and participate in the political system. A higher value indicate that basic health care is more equal in quality and that more people can exercise their rights (Coppedge et al, 2016a, p.253).

The fifth indicator is *power by socioeconomic group*. This indicator asks the coders to estimate how political power is distributed amongst different socioeconomic groups. A higher value indicates that “wealthier people have no more political power than those whose economic status is average or poor”. This means that political power is more equally distributed across economic groups (Coppedge et al, 2016a, p.249-250).

The sixth indicator is *power by social group*. This indicator asks the coders to estimate how political power is distributed amongst different social groups, for example ethnicity, language, race, region or religion. A higher value indicates that “all social groups have roughly equal political power” (Coppedge et al, 2016a, p.250).

The final indicator is *power by gender*. This indicator asks the coders to estimate if political power is distributed according to gender. A higher value indicate that men and women have roughly equal political power (Coppedge et al, 2016a, p.251).

Table 2. Summary statistics independent variables

Variable	Mean	Standard deviation	Min	Max	Observations
Gini					
Overall	41.0706	10.5242	15	73.9	N = 6340
Between		9.1620	21.9290	73.9	n = 145
Within		5.4597	20.9965	71.8533	T = 43.7241
Gini^2					
Overall	1797.542	907.8434	225	5461.21	N = 6340
Between		797.6313	489.5063	5461.21	n = 145
Within		473.123	-114.9938	5300.893	T = 43.7241
Family farms					
Overall	41.4684	23.8597	0	98	N = 666
Between		21.12817	0	90.5	n = 159
Within		12.01625	4.968468	88.63514	T = 4.1886
Family farms^2					
Overall	2288.066	2248.685	0	9604	N = 666
Between		1936.363	1	8204.167	n = 159
Within		1037.96	-2222.767	6662.233	T = 4.1886
Egalitarian democracy					
Overall	0.4423	0.2784	0.0285	0.9864	N = 16430
Between		0.2267	0.0964	0.9404	n = 169
Within		0.1673	-0.0511	0.9622	T = 97.2189
Equal distribution of resources					
Overall	0.4133	0.3090	0.0061	0.9910	N = 16430
Between		0.2466	0.0459	0.9481	n = 169
Within		0.1967	-0.2392	1.0461	T = 97.2189

Particularistic or public goods						
Overall	0.0216	1.4858	-3.5092	3.1538	N = 16430	
Between		1.1472	-2.1672	2.5929	n = 169	
Within		0.9103	-3.3092	3.7798	T = 97.2189	
Universal welfare						
Overall	-0.1698	1.4749	-3.2627	3.2323	N = 16430	
Between		1.0813	-2.1214	2.9457	n = 169	
Within		1.0333	-3.5457	2.9948	T = 97.2189	
Education inequality						
Overall	-0.3409	1.6361	-3.1429	3.6508	N = 16430	
Between		1.3812	-2.5146	3.3076	n = 169	
Within		0.9665	-3.9931	2.8373	T = 97.2189	
Health inequality						
Overall	-0.2241	1.5983	-3.2156	3.8246	N = 16430	
Between		1.3443	-2.9624	2.8149	n = 169	
Within		0.9343	-3.0846	3.3128	T = 97.2189	
Power by socioeconomic group						
Overall	-0.4016	1.4510	-3.5585	3.2521	N = 16430	
Between		1.0688	-2.2842	2.0329	n = 169	
Within		0.9916	-4.3019	2.7589	T = 97.2189	
Power by social group						
Overall	-0.1989	1.5194	-3.0069	3.3112	N = 16430	
Between		1.2094	-2.4572	2.8614	n = 169	
Within		0.9324	-2.8566	4.1127	T = 97.2189	
Power by gender						
Overall	-0.7840	1.3216	-2.9817	4.1967	N = 16430	
Between		0.9172	-2.8598	1.7560	n = 169	
Within		0.9753	-4.2337	3.8650	T = 97.2189	

Data retrieved from the V-Dem dataset (Coppedge et al., 2016b)

5.1.3 Control variables

I will, in my analysis, use a number of control variables. These are variables that could account for both the level of democracy and the level of inequality in a country, and therefore needs to be controlled for. I base my selection of control variables on the paper by Houle (2009), Boix (2003) and Ansell and Samuels (2010).

Economic variables have been shown to have an effect on democracy in previous studies. Lipset (1959) for example argues that countries that are more economically developed are more likely to install democracy. I therefore control for economic development since it might affect democratization. Economic development could as well affect the level of inequality thru the Kuznet curve (Houle 2009). I use data by Gleditsch (2002), found in the QoG dataset (Dahlberg, 2017). The variables used is log of GDP per capita. The data from these variables stretches from around 1945 until around 2000. The GDP per capita variable is the real GDP per capita estimate in constant US dollars with the base year of 2000.

Houle (2009, p. 603) argues that it is necessary to control for the resource curse theory, which states that a country with high revenues from natural resources prevent democratization since it provides revenues to the state. The elites in a country that has high revenues from natural resources are more reluctant to democratization since they want to avoid taxation. It is furthermore reasonable to think that large natural resources affect the inequality level since the revenues from these are more likely to go to an elite part of society and therefore have a negative effect on the level of inequality. I use variables from Haber and Menaldo (2011), extracted from the V-Dem dataset (Coppedge et al., 2016b) to control for the resource curse. This variable measures the real value of a country's petroleum production (Coppedge et al, 2016a).

The regional context of democratization is thought to effect the likelihood of democratization and inequality, Houle (2009) therefore controls for the proportion of democracies in the world. I will not control for the proportions of democracies in the world but use a variable that measure the percent of democracies in the region instead. I use the variable by Haber & Menaldo (2011), retrieved from the V-Dem dataset (Coppedge et al, 2016b). This variable measures the percentages of democracies within the region (Coppedge et al, 2016a).

Both Ansell and Samuels (2010) and Boix (2003) controls for educational attainment. I use the same variables as Ansell and Samuels (2010) to capture this, namely the percent of students per 100000 that are at university collected by Vahnanen (2003) and retrieved from the V-Dem dataset (Coppedge et al, 2016b).

A final control variable is population size. Barro (1999) control for the log of the population since larger countries could be harder to control and therefore could be assumed to be less democratic. I use the logged population in 1000s by Gleditsch (2002) retrieved from the QoG dataset to control for population size (Dahlberg, 2017).

Another set of variables that can influence both the dependent and the independent variable is the cultural and social context. Religion has been thought to effect on

democratization, where Protestantism is thought to be most helpful to democracy. Inequality is too thought to be affected by religion since different religions could have different tolerance levels of inequality. Houle (2009) adds variables for religious and ethnic fractionalization since this can effect democratization since in a more fractionalized society is the incumbent less likely to want to leave power to a member from another group. I will however, in my master’s thesis, not control for these variables since I assume that they do not vary over time.

Table 3. Summary statistics control variables

<i>Variable</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Min</i>	<i>Max</i>	<i>Observations</i>
<i>Log GDP per capita</i>					
<i>Overall</i>	8.3571	1.2339	4.8889	13.3570	N = 9316
<i>Between</i>		1.1390	6.0406	11.2737	n = 199
<i>Within</i>		0.4416	6.1571	10.8754	T = 46.8141
<i>Log GDP per capita^2</i>					
<i>Overall</i>	71.3652	21.0846	23.9022	178.4101	N = 9316
<i>Between</i>		19.3898	36.5509	127.5083	n = 199
<i>Within</i>		7.6203	35.1894	131.5333	T = 46.8141
<i>Educational inequality</i>					
<i>Overall</i>	47.2586	27.8077	1.3388	99.8043	N = 10980
<i>Between</i>		24.4161	7.6192	95.1623	n = 135
<i>Within</i>		14.8558	-2.3110	97.8310	T = 81.3333
<i>Log population</i>					
<i>Overall</i>	8.4390	2.1210	1.7917	14.0964	N = 9316
<i>Between</i>		2.1411	2.2346	13.7326	n = 199
<i>Within</i>		0.3390	6.6951	9.8741	T = 46.8141
<i>Oil income</i>					
<i>Overall</i>	271.1003	2102.757	0	78588.8	N = 10256
<i>Between</i>		1592.491	0	18421.24	n = 157
<i>Within</i>		1444.415	-18150.14	60438.66	T = 65.3248
<i>Democracy in region</i>					
<i>Overall</i>	30.9035	32.8309	0	100	N = 10154
<i>Between</i>		26.3233	3.3707	93.9071	n = 155
<i>Within</i>		16.3705	-21.1797	97.7854	T = 65.5097

Data retrieved from the V-Dem dataset (Coppedge et al., 2016b) and the QoG dataset (Dahlberg, 2017).

5.2 Estimation strategy

I use a time series cross section statistical model with fixed effects for investigating the research question and to confirm or reject the hypothesizes. I use this regression model since my data is in the form of time series data. I can tell that my data is in the form of time series data since my

units of observations are country-year, meaning that I have observation for each country for each year, for example Sweden 1998, Sweden 1999 etcetera (Wooldridge, 2014).

I can, by using a time series cross sectional regression model with country fixed effects, investigate the effects within countries over time (Lührman, McMann and van Ham, 2017). It will thereby be possible for me to investigate how inequality has effected democracy levels within the country over time. I use clustered standard errors on the country variable since I assume the error term to be correlated within countries but uncorrelated between countries.

I will in my analysis run regressions with all of the above described measurements of inequality as independent variables. I can, based on the significant results, find which of the theoretical models that hold. I can thereby answer the first part of my purpose which asked which of the established theories that best can explain the relationship between inequality and democracy level. To test the theoretical argument made by Acemoglu and Robinson (2006) of the inverted U-shape relationship between inequality and democracy I will use squared variables of the inequality measurements of the Gini coefficient and land inequality in regression models. If the squared variable is significant then this is a sign of the existence of an inverted U-shaped relationship between inequality and democracy level.

The second part of my purpose was to test an alternative operationalization of inequality, the *egalitarian principle of democracy* and its subcomponent indexes and indicators. I therefore run the same regression model with these operationalization's as the independent variables.

To test the last purpose of the study, which is the effect of inequality over time I will use the same regression model as described above. However, instead of using the normal independent variables I will use the lags of my independent variable. I lag all the independent variables up to 60 years back in time. If the coefficient for this lagged variable is significant I can see that this lag of the independent variable affect democracy level. I can in this way test the third purpose of my thesis.

5.3 Delimitations

A general problem in the research field on the relationship between inequality and democracy is the causality of the relationship. Even though a significant result is found can it be hard to argue that the causal direction is one where inequality leads to democracy and not the other way around. It could, and have, been argued that an increasing level of democracy leads to lower inequality and not the other way around.

Researches such as Ansell and Samuels (2010) have tried to solve the bidirectional causality problem by using an instrumental variable approach. They have used a regional Gini coefficient as an instrument and have found this to be a sufficient instrumental variable even though it is not completely randomly assigned.

The purpose for my master's thesis is not to establish a causal direction but merely to investigate if I find an affect of inequality on democracy and if this affect varies over time and changes when I use alternative and more available operationalization's of inequality. For me to also develop and use an instrumental variable in order to try to establish any causal direction has not been possible within the scope of this thesis. I do however find the exploration of a causal direction between inequality and democracy to be an important and interesting topic for future research. I will be careful to say that any significant effects of inequality on democracy are causal effects due to the discussion and disagreement over the causal direction of the relationship between inequality and democracy.

Another delimitation in my study is the time frame investigated. Ideally would I have investigated the whole of the 20th century since this is when a lot of countries democratized. Data limitations on variables such as land inequality however restricts the investigated time-period to 1951-2006.

6 Analysis and results

In this section, I present my analysis and findings. I present the results in the same order as the purposes of my study, starting by testing the different established operationalization's of inequality, the Gini coefficient and land inequality, on democracy level. I find in my results no proof for any the theories between the previously used measurements of inequality and democracy level.

I then present the results of the alternative operationalization of inequality, the V-Dem *egalitarian index* and its subcomponent indexes and indicators. I here find mixed results, where some of the indexes and indicators are significant and effects democracy level in the direction predicted.

Finally, I present the results of the effect of the independent variables on democracy level over time. Here I find that the effect of inequality varies greatly over time where some measurements have a significant effect on democracy for one or a couple of years and then remains insignificant.

6.1 Gini and Land inequality effect on democracy level

This section starts with the presentation of the results with the Gini coefficient as the independent variable. I then continue by presenting the results of land inequality on democracy level.

Table 4. Time series cross section regression models with fixed effects and clustered standard errors. Dependent variable is Polity score, independent variables Gini coefficient and the Gini coefficient squared. The years analyzed are between 1951 and 2006.

Variable	(1) Polity	(2) Polity
Gini	-0.0174 (0.0292)	
Gini ²		-0.0003 (0.0003)
Log GDP per capita	-6.8976 (5.6080)	-6.9236 (5.5991)
Log GDP per capita ²	0.4197 (0.3402)	0.4225 (0.3395)
Educational Gini	-0.1017** (0.0513)	-0.1021* (0.0516)
Log population	0.9495 (2.5384)	0.9859 (2.5312)
Oil income	-0.0001 (0.0002)	-0.0001 (0.0002)
Democracy in region	0.1209*** (0.0177)	0.1220*** (0.0179)
Year	Yes	Yes
Constant	24.3295 (29.7963)	23.9725 (29.8025)
Observations	4,528	4,528
R-squared	0.3459	0.3468
Number of countries	124	124

Data retrieved from the V-Dem dataset (Coppedge et al., 2016b) and the QoG dataset (Dahlberg, 2017).

Robust standard errors in parentheses

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

The result from table 4 shows that the Gini coefficient has a negative effect on polity score, this is a result that is in line with theories by for example Boix (2003) who state that higher levels the Gini should be associated with lower levels of democracy. However, is the effect not statistically significant neither when the Gini nor when the squared Gini variable is used as independent variable. These results are in line with the theory presented by Ansell and Samuels (2010) but contradicts the theories presented and developed by Boix (2003) and Acemoglu and Robinson (2006). Toerell (2010) is one in a line of authors who have found similar results.

Education Gini have a negative significant effect on Polity level, which is in line with theory, where a higher inequality in education should be associated with lower democracy levels. The other significant coefficient is democracy in the region, the coefficient of this variable is positive. This is also in line with previous findings, where a higher level of democracy in the region is associated with higher levels of democracy within the country.

The results of an insignificant Gini coefficient lead me to reject hypothesis H1a, which said that high economic inequality should have a negative effect on democracy level and H2c, which said that higher economic inequality should have a positive effect on democratization. I furthermore reject hypothesis H1b, which suggested a U-shape relationship between democracy and inequality, since the Gini square variable is insignificant. This leads me to conclude that the relationship between inequality measured as Gini and democracy level is not an inverted U-shaped relationship.

The results indicate that inequality, operationalized as the Gini coefficient, has no effect on the level of democracy in a country. Inequality operationalized with the Gini coefficient does not have an effect on democracy measured as institutions where citizens can “express effective preferences about alternative policies and leaders”, the “existence of institutionalized constraints on the exercise of power by the executive” or the presence of guaranteed civil liberties to all citizens (Coppedge, 2016a p. 355).

Previous studies that has found any relationship between inequality and democracy are according to the results in table 4 wrong. What matters for democracy level is, according to table 4, the percent of democracies in the region and whether there is equal education. A more equal income distribution is not associated with a higher democracy level in a country. If the median voter becomes relatively poorer, as described by Boix (2003), this does not lead to a push for democracy in a country but it seems to have no effect. However, if the percent of democracies in the region goes up has this a large positive effect on the democracy level within a country. If the education inequality goes up has this a negative effect on democracy level, this result is in line with the results by Castello-Climent (2008).

Table 5. Time series cross section regression models with fixed effects and clustered standard errors. Dependent variable is Polity score, independent variables family farms and family farms squared. The years analyzed are between 1951 and 2006, with 10 year intervals.

Variable	(3) Polity	(4) Polity
Family farms	-0.0244 (0.0218)	
Family farms^2		-0.0003 (0.0003)
Log GDP per capita	-0.0836 (6.3821)	-0.1581 (6.3930)
Log GDP per capita^2	0.0163 (0.3890)	0.0245 (0.3891)
Educational Gini	-0.1061* (0.0589)	-0.1080* (0.0589)
Log population	-0.5287 (2.2859)	-0.5741 (2.2432)
Oil income	0.0000 (0.0002)	0.0000 (0.0002)
Democracy in region	0.1140*** (0.0233)	0.1114*** (0.0234)
Year	Yes	Yes
Constant	7.2641 (32.3673)	7.6363 (32.2715)
Observations	510	510
R-squared	0.3218	0.3228
Number of countries	132	132

Data retrieved from the V-Dem dataset (Coppedge et al., 2016b) and the QoG dataset (Dahlberg, 2017).

Robust standard errors in parentheses

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

The results from table 5 show that there is a negative effect of both family farms and family farms squared on polity score. The results indicate that a higher percentage of family farms is associated with lower levels of democracy, a result that goes against the theory by Ansell and Samuels (2010). The coefficients of family farms and family farms squared are not significant. These results are against all the theories presented in the theory chapter. Like in the previous table are the only significant coefficients the ones on educational Gini and democracy in the region.

I, based on these results, reject hypothesis H2a of there being a negative relationship between land inequality and democracy level. Furthermore, I reject hypothesis H2b of there being an inverted U-shape relationship between land inequality and democracy level.

As for the section on the Gini coefficient, have previous studies that has found a relationship according to these results been wrong and what matters for democracy level is the percent of democracies in the region and if there is equal education. My results indicate that inequality, operationalized as the percent of family farms, has no effect on the level of

democracy in a country. A larger share of family farms in a country does not lead to a higher democracy level. A higher level of family farms does not have an effect on democracy measured as institutions where citizens can “express effective preferences about alternative policies and leaders”, the “existence of institutionalized constraints on the exercise of power by the executive” or the presence of guaranteed civil liberties to all citizens (Coppedge et al., 2016a p. 355). The mechanism described by Ansell and Samuels (2010) where landholders want representation in order to avoid taxation and expropriation of the land does not seem to be the case in my study.

It is furthermore important to point out the number of observations that these results are based on. In table 4 were the number of observations over 4500 whilst the regressions in table 5, with land inequality, only has 500 observations. This clearly illustrates the problems with obtaining data on the variable of inequality, and especially land inequality.

6.2 The alternative operationalization of inequality

I present in this section of my analysis the results of the alternative operationalization of inequality, where I have used the V-Dem indexes and indicators to measure inequality.

The result in table 6 shows that the *egalitarian democracy index* has a positive and significant effect on polity score. This effect is in line with the theory presented in the theory chapter and I can confirm hypothesis H3a of there being a positive effect of egalitarian democracy index on democracy level. I can furthermore confirm hypothesis H3b since a high value of the *equal distribution of resources* index, low inequality, is associated with a higher level of democracy. This significant effect might however be due to a close correlation between the polity score and the score on egalitarian democracy. A correlation matrix is included in appendix B. This matrix shows that the correlation between the *egalitarian democracy index* and the polity variable is 0,79, this can be compared to the correlation between the Gini coefficient and the polity variable which is -0,12. The other variables in the *equal distribution of resources index* does not show the same high correlation with polity.

The coefficient of the *equal distribution of resource index* has a significant effect on the polity score in the predicted direction. This leads me to confirm hypothesis H3b, where a higher value on the equal distribution of resources value should be associated with a higher value on the democracy level.

Table 6. Time series cross section regression models with fixed effects and clustered standard errors. Dependent variable is Polity score, independent variables: the egalitarian democracy principle index, the equal distribution of resources index, the particularistic or public goods indicator, the universal welfare indicator, the educational inequality indicator, the health inequality indicator, the power by socioeconomic group indicator, the power by social group indicator and the power by gender indicator. The years analyzed are between 1951 and 2006.

Variables	(5) Polity	(6) Polity	(7) Polity	(8) Polity	(9) Polity	(10) Polity	(11) Polity	(12) Polity	(13) Polity	(14) Polity
Egalitarian democracy principle	17.6908*** (3.2572)									
Equal distribution of resources		9.8577*** (3.0974)								
Particularistic or public goods			1.0230** (0.4196)							
Universal welfare				0.9260* (0.5300)						
Educational inequality					0.6080 (0.5657)	0.4766 (0.5488)				
Health inequality							0.8979 (0.5471)			
Power by socioeconomic group								1.6322*** (0.4204)		
Power by social group									2.6123*** (0.4221)	
Power by gender										1.8207*** (0.5852)

Log GDP per capita	-1.4392 (4.2475)	-2.6964 (4.6097)	-3.1313 (4.8407)	-3.2716 (4.9097)	-3.6885 (4.8947)	-0.6388 (3.6373)	-3.6522 (4.8877)	-2.5707 (4.9384)	-1.2707 (4.5396)	-1.0050 (4.9343)
Log GDP per capita^2	0.0695 (0.2549)	0.1578 (0.2765)	0.1985 (0.2912)	0.1987 (0.2947)	0.2282 (0.2920)	0.0452 (0.2163)	0.2177 (0.2912)	0.1764 (0.2960)	0.0970 (0.2686)	0.0606 (0.2930)
Educational Gini	-0.0917** (0.0385)	-0.0934** (0.0415)	-0.0845* (0.0433)	-0.0835* (0.0439)	-0.0891* (0.0455)		-0.0953** (0.0452)	-0.0990** (0.0426)	-0.0905** (0.0410)	-0.1011** (0.0454)
Log population	-2.1640 (1.7697)	-2.0329 (1.9760)	-1.0771 (2.0077)	-1.5273 (2.0270)	-0.7570 (1.9801)	0.4966 (1.3318)	-1.1328 (1.9937)	-2.5510 (2.0592)	-0.9259 (1.8612)	-1.1617 (2.0379)
Oil income	0.0000 (0.0001)	-0.0000 (0.0001)	-0.0000 (0.0001)	-0.0000 (0.0001)	-0.0000 (0.0001)	0.0000 (0.0000)	-0.0000 (0.0001)	-0.0000 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)
Democracy in region	0.0813*** (0.0166)	0.1027*** (0.0177)	0.1115*** (0.0173)	0.1116*** (0.0173)	0.1146*** (0.0171)	0.1109*** (0.0160)	0.1121*** (0.0171)	0.1050*** (0.0180)	0.0940*** (0.0166)	0.0996*** (0.0192)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	20.1666 (22.4645)	27.1248 (24.1990)	23.1615 (24.9181)	28.1394 (25.3693)	23.4940 (25.7540)	-5.3565 (17.7420)	27.4548 (26.0483)	34.1263 (24.0022)	14.3844 (23.9707)	18.7897 (25.4581)
Observations	6,013	6,013	6,013	6,013	6,013	6,687	6,013	6,013	6,013	6,013
R-squared	0.4217	0.3655	0.3430	0.3376	0.3274	0.3258	0.3323	0.3684	0.4045	0.3540
Number of countries	132	132	132	132	132	155	132	132	132	132

Data retrieved from the V-Dem dataset (Coppedge et al., 2016b) and the QoG dataset (Dahlberg, 2017).

Robust standard errors in parentheses

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

The indicators of the *equal distribution of resources index* presents mixed results on their influence on democracy level. Both the *public spending* and the *universal welfare coefficient* have a positive effect on the polity score. This is however contradicting the theory which stated that a larger spending on public goods and a more universal welfare should be associated with less democracy since the people do not have any need for a redistributive democratic government. The results of these two coefficients leads me to reject hypothesis H4a, which said that more public goods spending and more universal welfare systems should have negative effect on democracy level.

The *educational* and *health indicators* coefficients have a positive effect on democracy level. This coefficient is in line with the theoretical argument presented but, since the coefficients are not statistical significant, I am rejecting both hypothesis H5a and H6a, which said that lower educational inequality and lower health inequality should have a positive effect on democracy level.

The coefficients for *power distributed by socioeconomic group, social group and gender* are all positive and significant. These findings are in line with the theoretical arguments made and indicate that a more equal distribution of power between socioeconomic groups, social groups and between the genders are associated with a higher level of democracy. These results lead me to confirm hypothesizes H7a and H8a, which said that more unequal distribution between social groups, socioeconomic groups and genders should be associated with lower levels of democracy.

In all of the models in table 6, and like the results in table 4 and 5, are the only other significant coefficients educational Gini and democracy in the region.

The results show that more spending on public goods is associated with a higher democracy level. This could have to do with for example better roads with allows people to have the chance to participate more and therefore might lead to a higher democracy level. The same could be with universal healthcare, where a larger public healthcare leads to a higher number of healthy people, which leads to more democratic participation and therefore a higher democracy level. The results of the power variables³ clearly shows that power distribution in a society is important for the level of democracy. A society where all groups of people have more equal power clearly has a higher level of democracy.

Both the spending on public goods variable and the universal healthcare indicator can lead to an increase in the institutions where citizens can express their alternative

³ *Power by socioeconomic position, power by social group and power by gender*

preferences, which is one of the parts of the Polity measurement of democracy. A higher value on the power variables could affect the democracy variables via the guarantee of civil liberties to all citizen's part of democracy.

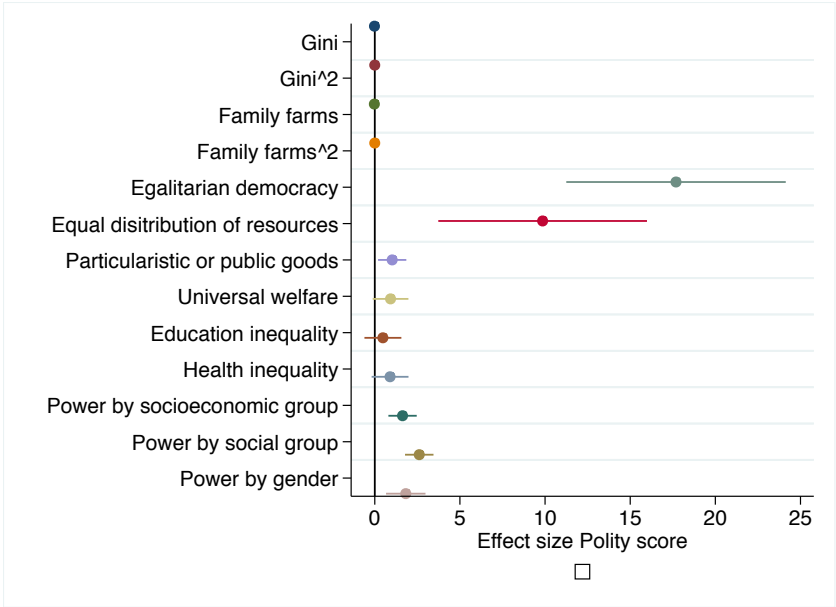
6.3 Effect sizes

Graph 1 shows the different effect sizes of the coefficients of the independent variables. From this graph I conclude that the *egalitarian democracy index* and the *equal distribution of resources index* has the largest effects on the polity score. The *equal distribution of resources index* has about half of the polity score scale effect. This means that a change by one to a more equal distribution of resources society changes the polity score by 10 points, which is half of its scale.

I furthermore conclude that out of the *equal distribution of resources indicators*, has *power by social group*, *power by gender* and *power by socioeconomic group* the largest effect on democracy level. A change by one in any of these indicators changes the polity score by a couple of points which still can be argued to be a large change for a 20-point scale.

Education inequality has been investigated by other researches and it seems like, even though significant, it does not have any large substantial effect.

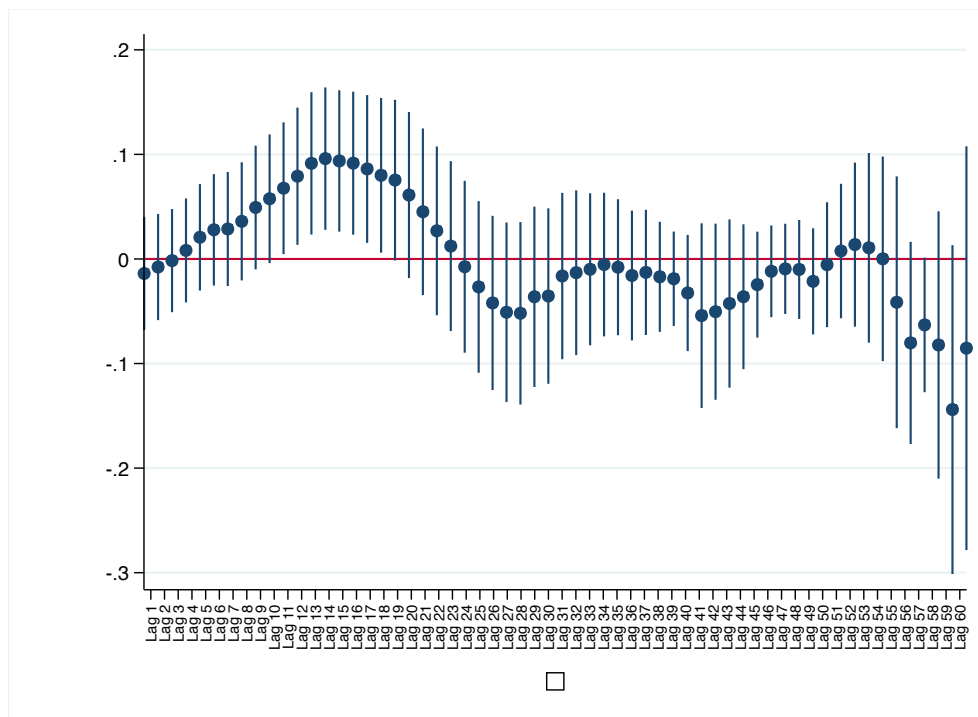
Graph 1. Effect size



6.4 Analysis of the effect over time

This section of my analysis present the results of the over-time effect of the different independent variables on democracy level. Each point in the graphs represent a regression where the corresponding lag of the inequality measurement has been used as the independent variable. The point in the graph is the value of the coefficient for this lag and the line surrounding it is the standard error. If the line is fully above or below the 0 line is the coefficient for the regression statistically significant. The regressions are based on the same data as all the previous regressions.

Graph 2. The effect of the lagged Gini coefficient variable on democracy level.



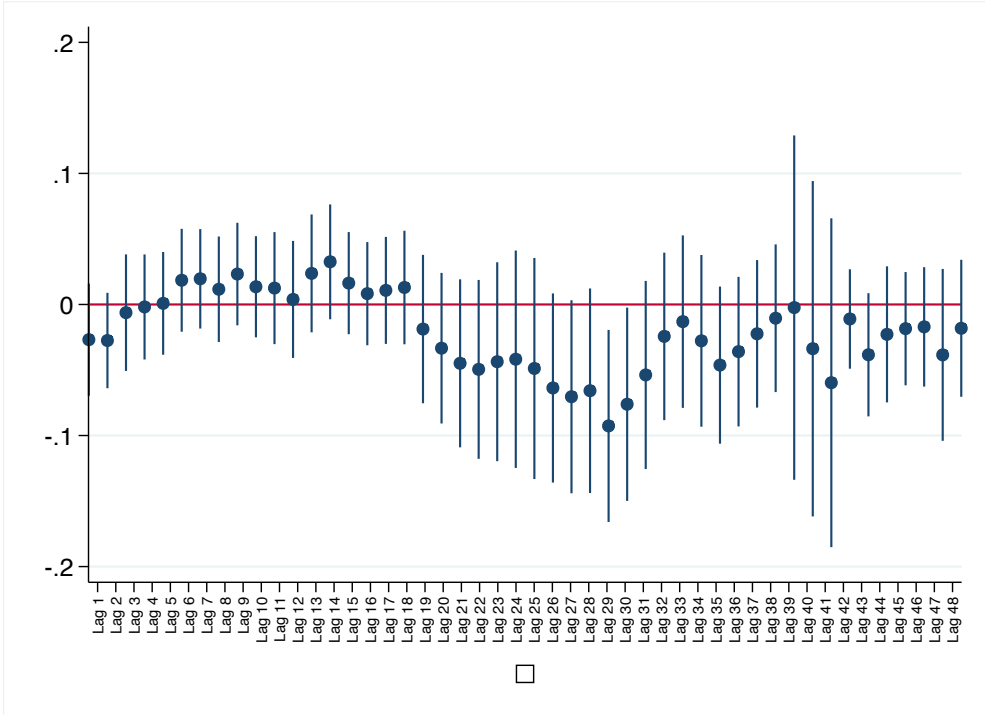
As has been previously shown in Table 4 the Gini coefficient has no immediate effect on democracy level. This result goes against the theoretical arguments made by Boix (2003) and Acemoglu and Robinson (2006), but are in line with theory by Ansell and Samuels (2010). However, Graph 2 show that Gini has a significantly positive lagged effect of about 10-17 years. The significantly positive effect of the Gini coefficient on the polity score is against the theories by Boix (2003). These results mean that the Gini score of a country for 10-17 years back in time has a positive effect on democracy level, meaning that a more unequal society 10-17 years back is associated with a higher democracy level today.

The results in Graph 2 lead me to reject hypothesis H1c which said that economic inequality should have a long-term negative effect on the democracy level.

The results in Graph 2 could confirm the theory by Ansell and Samuels (2010), that the fear of expropriation of assets by the elite amongst the rich in highly unequal societies drives a push for democracy. My results however show that this process takes between 10-17 years, something that has not been investigated before.

My results show that the assumed stickiness of the effect of the Gini coefficient is missing and the use of the Gini coefficient from different points in time can be problematic since the effect of the Gini coefficient on democracy level is changing depending on from when you use the Gini coefficient. My results show that the assumption of inequality not changing over the past 20 years (Bollen and Jackman, 1985) is wrong and that the effect of inequality is different depending on from when the measurement is used.

Graph 3. The effect of the lagged Family farms variable on democracy level.



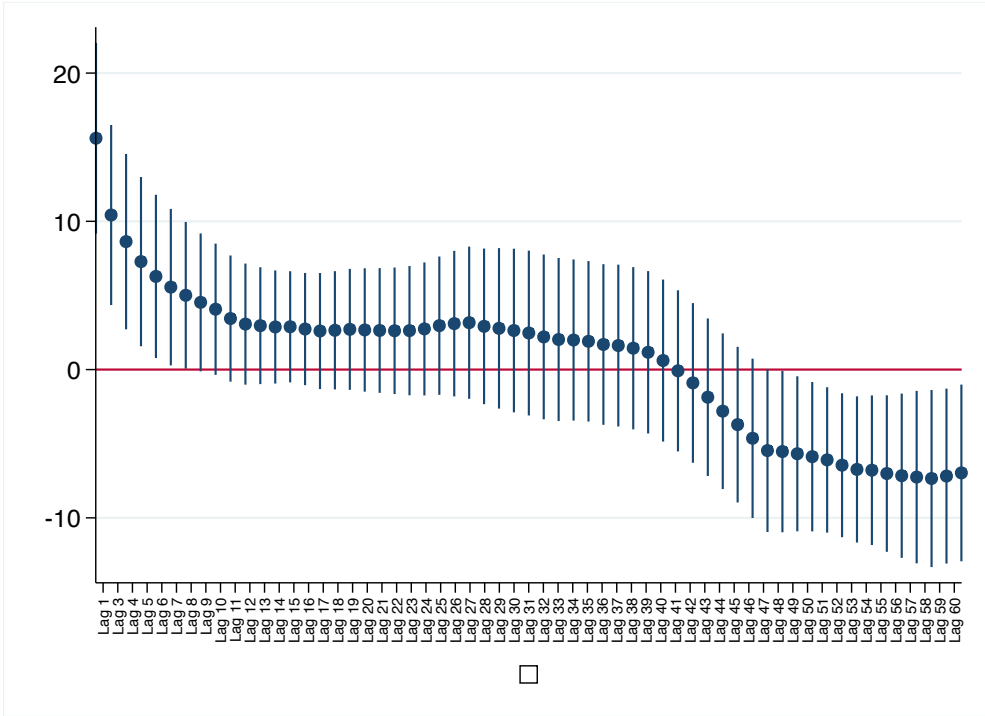
Graph 3 show that the lagged family farm measurement of inequality has no systematic effect on democracy level. These result goes against the theoretical arguments made by Ansell and Samuels (2010) and the results found by them.

There is no clear trajectory and there is only at some points in time that percent of family farms has an effect on democracy level. There is a significant effect for lag 29 and 30, this suggest that if there were a more equal society 29-30 years ago is this associated with

a significantly higher democracy level. These results suggest that it takes 30 years for equality to have an effect on democracy level. The results in Graph 3 suggest that mechanism described in the theory by Ansell and Samuels (2010), that the landholders want representation to avoid expropriation, takes 30 years to get have an effect.

I, based on the results in Graph 3, reject hypothesis H2d which said that the effect of land inequality should be long term. This since I find no systematic significant effects of land inequality.

Graph 4. The effect of the lagged Egalitarian democracy index variable on democracy level.



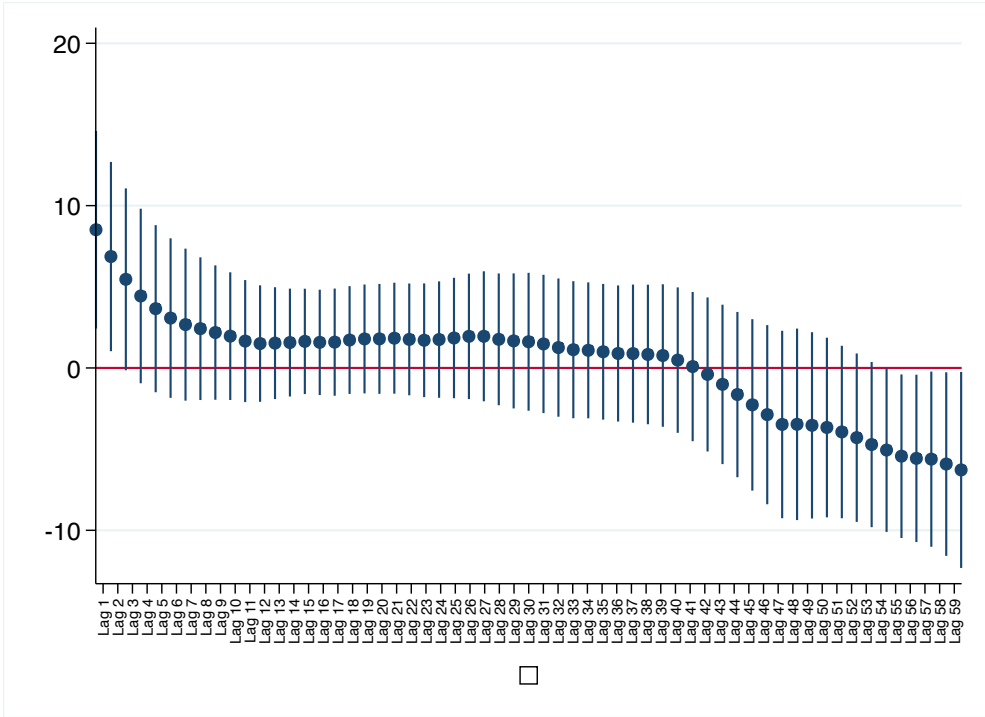
The initial positive and significant coefficient in Graph 4 indicates that there is a positive relationship between the *egalitarian democracy index* and the democracy level, meaning that a higher value on the *egalitarian democracy index* is associated with a higher democracy level. These results are in line with the theoretical arguments made by Boix (2003) and Acemoglu and Robinson (2000, 2001 and 2006). However, are the results against the theoretical argument presented by Ansell and Samuels (2010). This *egalitarian index* is significant for around 10 years back in time. A positive 10-year lag can be interpreted as a higher value on egalitarian democracy up until 10 years ago has a positive effect on the democracy level today.

The results in Graph 4 contradict the results in Graph 2, where economic inequality only had a positive effect around ten years back in time but not otherwise. In Graph 4 the effect is positive for around 9 years back in time and then has a negative effect over 45

years back in time. For around lag 47 and onwards is the effect significantly negative, a result that is against the theory by Boix (2003) but in line with the theory by Ansell and Samuels (2010). Hypothesis H3c said that a more equal society, a higher value on the *egalitarian democracy index*, should be associated with a long time positive effect on democracy level. I reject hypothesis H3c since lag 47 and onwards shows a negative effect of a more equal society on democracy level.

One concern that needs to be repeated is the close correlation between the *egalitarian democracy index* and the polity variable, see Appendix B.

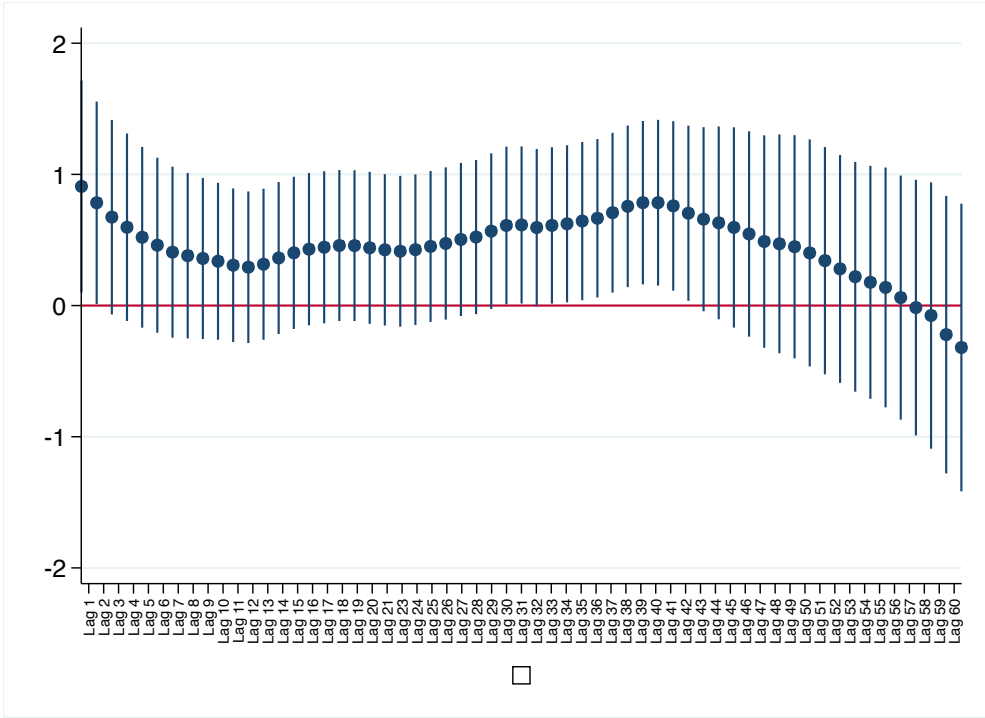
Graph 5. The effect of the lagged Equal distribution of resources index variable on democracy level.



Graph 5 shows a positive coefficient on the *equal distribution of resources index* variable which indicates a positive relationship, meaning that a higher equal distribution of resources level is associated with a higher polity measurement of democracy. These results are in line with the theoretical arguments by Boix (2003) and partly by Acemuglu and Robinson (2000, 2001 and 2006). The coefficients are significant for around three years back in time, meaning that a higher equal distribution of resources variable three years back is associated with a higher level of democracy today. The graph then shows a slowly moving downward trajectory, where the effect is slowly decreasing.

For around lag 53 and onwards is the effect significantly negative, this is results that is against theory, and would indicate that a higher value on the equal distribution of resources index (a more equal society) 50 years ago would be associated with a lower democracy level today. I therefore reject hypothesis H3c which hypothesized a long time effect.

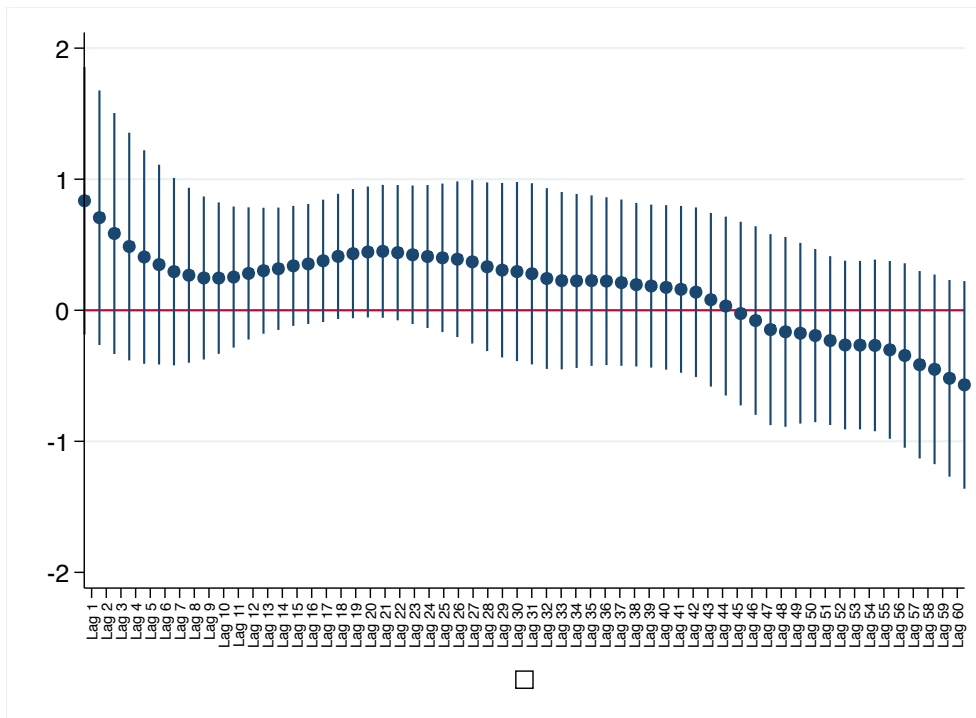
Graph 6. The effect of the lagged Particularistic or public goods variable on democracy level.



The results in Graph 6 suggest a significant positive relationship between *particularistic or public goods* and democracy level for 1-3 years back in time. A higher public goods spending is associated with a higher democracy level. This is not in line with the theory presented in the theory chapter where I argue that a higher spending on public goods should stop the want for democracy and redistribution. I hypothesized that there would be a short term negative effect on the lagged particularistic or public goods variable. Since my results clearly show a short term positive effect I can reject hypothesis H4b, which said that there should be a long term negative effect of the particularistic or public goods indicator on democracy level.

The graph suggests that spending on public goods has two effects on democracy level, one positive immediate effect and one that takes a longer time to have an effect.

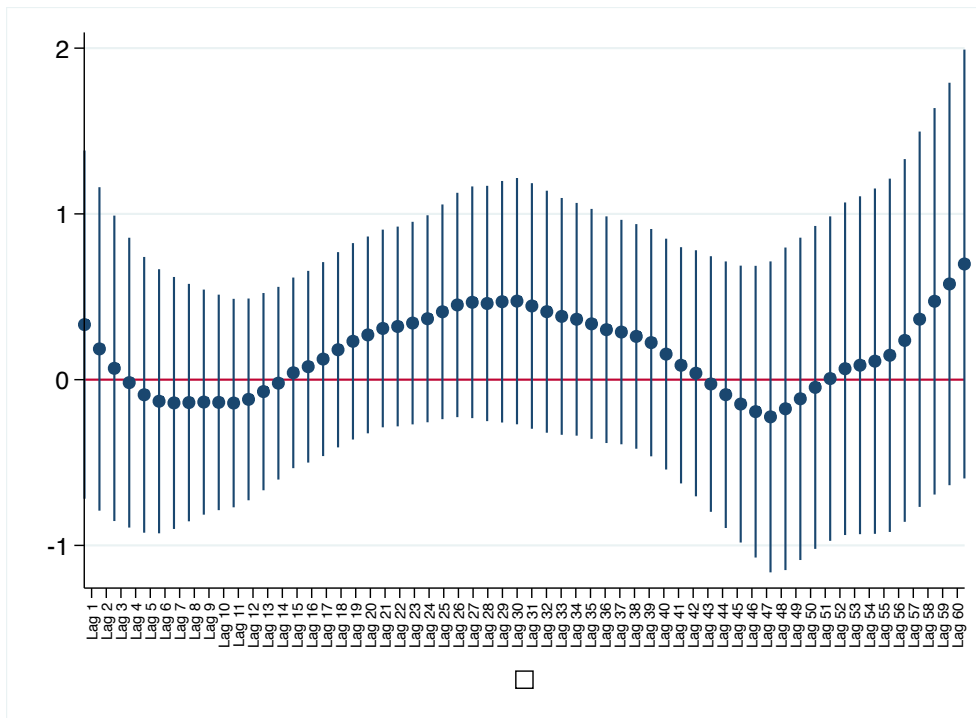
Graph 7. The effect of the lagged Universal welfare variable on democracy level.



Graph 7 show that the *universal welfare* variable does not seem to have any significant effect on democracy level for any point in time. This in not in line with the theory presented in the theory chapter. I there theorized that there should be a negative relationship between a universal welfare and democracy level, this since people with an already universal welfare have no need for democracy.

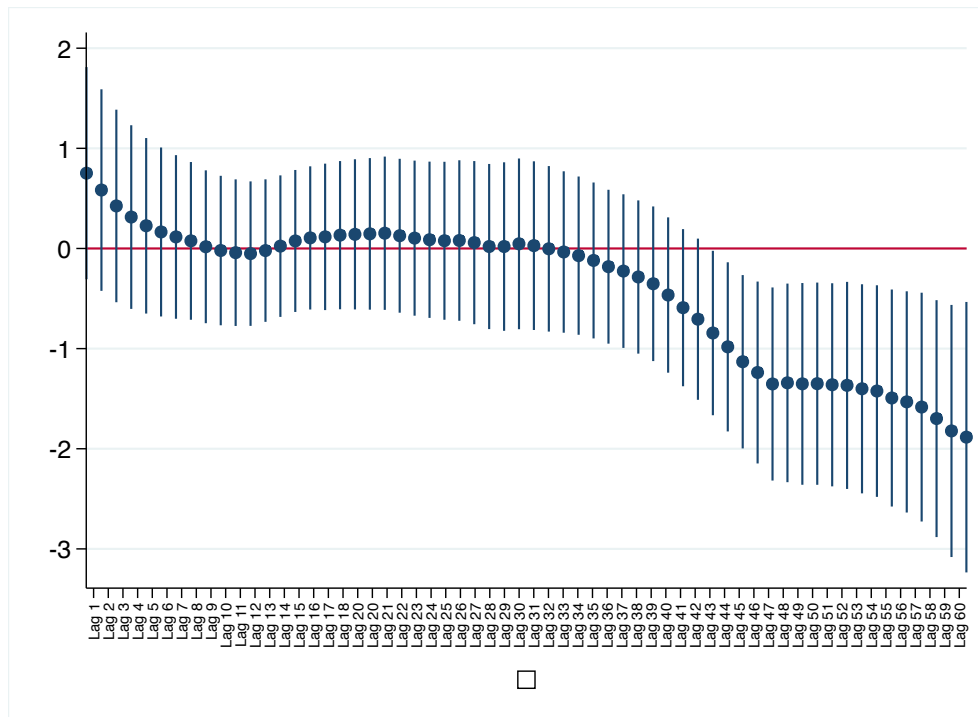
I reject hypothesis H4b (explained above) based on the results presented in Graph 7. My results suggest that *universal welfare* has no effect in the level of democracy in the past.

Graph 8. The effect of the lagged unequal education variable on democracy level.



Graph 8 display the effect of the lagged variable *unequal education* on the democracy level. I can in Graph 8 see that *unequal education* have no significant effect on democracy level. The theory chapter presented results by Castello-Climent (2008) who found unequal education to have a negative effect on democracy level. Castello-Climent (2008) used the measurement of education inequality for five years prior and I therefore hypothesized that the effect would be significant five years back in time. However, the results found in Graph 8 leads me to reject hypothesis H5b which said that there should be a negative effect for at least five years' back in time of educational inequality on democracy level. These results are surprising given the findings by Castello-Climent (2008).

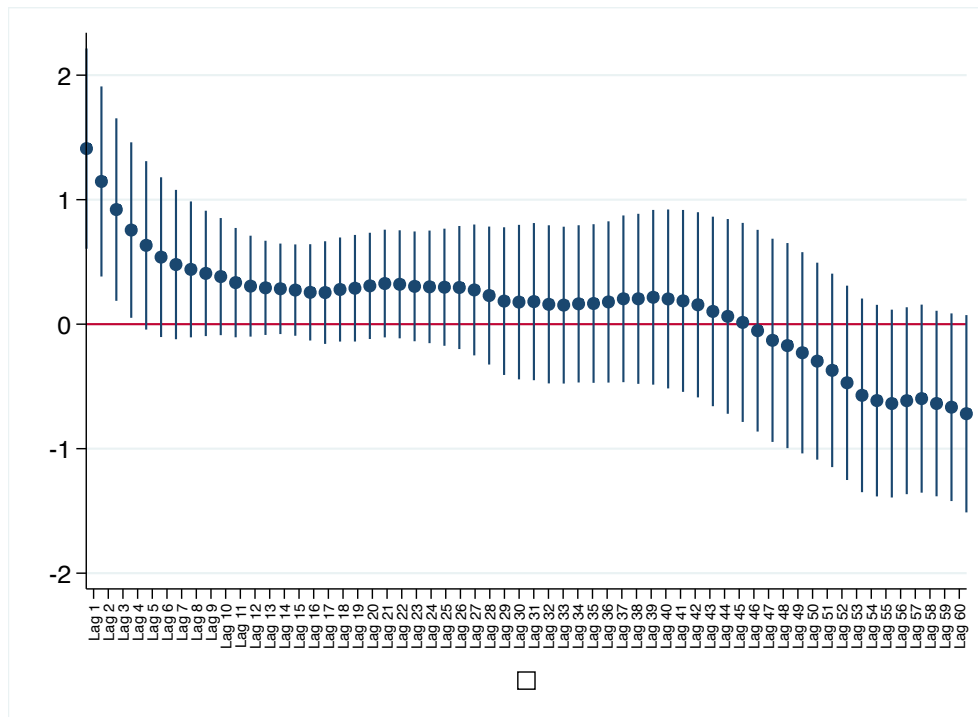
Graph 9. The effect of the lagged unequal health variable on democracy level.



As shown in Graph 9 has the *unequal health* variable no immediate or short-term effect on democracy level. From lag 40 and onwards is the coefficient negative, indicating a negative relationship; where higher health equality is associated with a lower democracy level. Any theoretical relationship between health inequality and democracy level and the lagged effects was hard to find. However, I theorized that there ought to have been a positive relationship with higher health equality is associated with a higher democracy level.

The over time-effect was hypothesized to have a long term positive effect, where higher health equality is associated with a higher democracy level. Based on the results in Graph 9 I reject hypothesis H6b which said that there ought to be a long-term positive effect of higher health equality on democracy level.

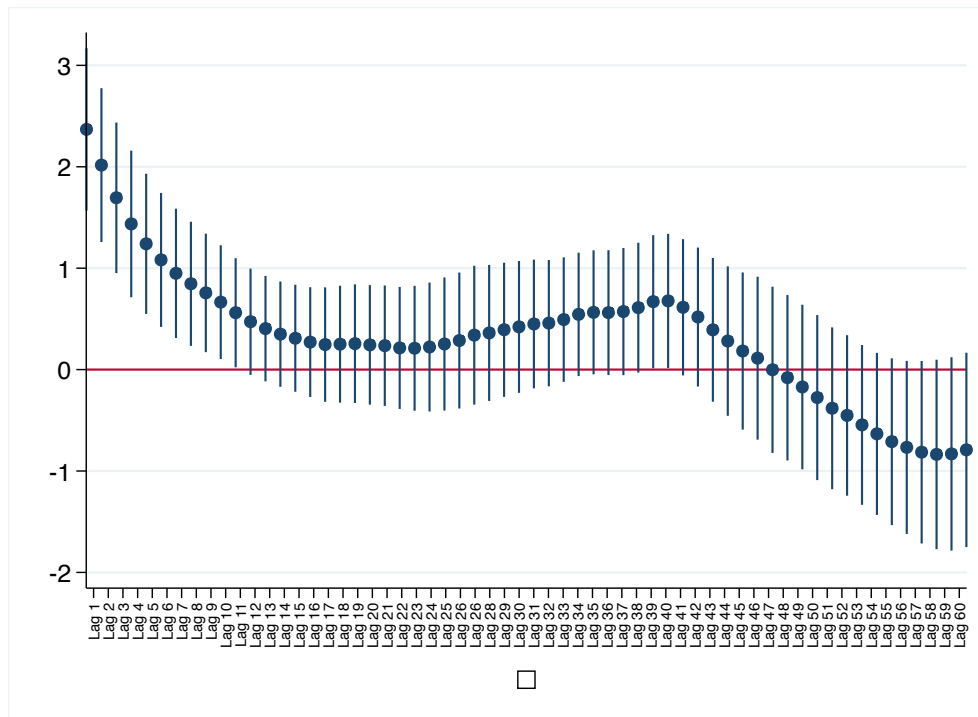
Graph 10. The effect of the lagged Power by Socioeconomic group variable on democracy level.



Graph 10 shows a positive relationship between the *power by socioeconomic group* variable and the democracy level variable. This positive relationship means that higher equal power distribution among socioeconomic positions is associated with higher polity democracy. This is in line with the theory by for example Vahanen (2003). The results are significant for around 5 years back in time meaning that a higher equal power distribution among socioeconomic positions five years ago is associated with higher polity democracy today. Hypotheses H7b read that there should be a long negative lagged effect of power by socioeconomic group on democracy level. I reject hypothesis H7b since I do not find a long lagged positive effect of more equal *power by socioeconomic group* on democracy level.

Perhaps could this indicator be an alternative measurement to the Gini coefficient since it catches some aspects of economic inequality. The steady downward trajectory would then indicate that economic inequality has a short term effect but then ceases to play an important role for democracy the level.

Graph 11. The effect of the lagged Power by social group variable on democracy level.

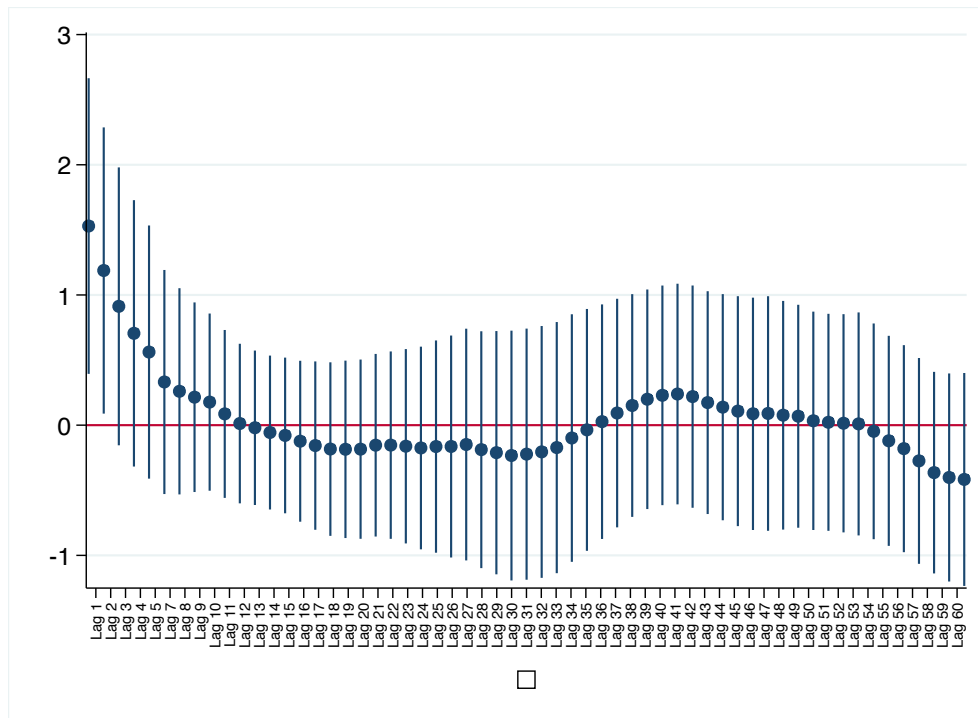


As shown in Graph 11 is there a positive relationship between *power by social group* and democracy level, this means that higher equal distribution of power between social groups is associated with higher polity democracy. This result is in line with the theoretical argument presented in the theory chapter. The results in Graph 11 show that this indicator is positive and significant for around 10 years back in time. For around lag 55 and onwards is the effect significantly negative, which is against the theoretical argument made in this master's thesis. Even though the theoretical argument is the same for this indicator and the previous indicator of *power by socioeconomic position* are the results different when it comes to the lagged effects. The *power by social group indicator* have seems to have a longer stickiness in its effect on democracy level, meaning that even the result on the variable 10 years ago has an effect today.

Just as for the previous indicator was it hypothesized that there should be a long term positive effect. I reject hypothesis H7b since no long term effect is found.

An interesting result is that, compared to *power by socioeconomic group*, the *power by social group* has a longer effect on democracy level where it continues to have a significant effect for 11 years whilst the *power by socioeconomic group* only has a significant effect for 3-4 years.

Graph 12. The effect of the lagged Power by Gender variable on democracy level.



Graph 12 shows the lagged effect of the *power by gender* variable on democracy level. As can be seen in Graph 12 is this a positive relationship, this means that higher equal distribution of power between the genders is associated with higher polity democracy. These results are in line with the theory by Inglehart et al. (2002). The results are significant and positive for around 3 years back in time meaning that a high level of power between gender three years back is associated with a higher level of democracy. The hypothesis formulated in the theory chapter read that there should be an immediate effect of the *power by gender* variable on democracy level. I confirm hypothesis H8b since the effect is only significant for around three years back. Graph 12 thereby confirms the theory that more gender equality and democracy more or less occur at the same time.

It is interesting to compare this power distribution variable to the other two power distribution variables. The *power distribution by gender* is the only one the power variables that only has an immediate effect on democracy level and not any longer effect. This seems to indicate that the *power distribution by gender* has a different way of effecting democracy levels compared to the other power distribution variables.

7 Conclusions, concerns and suggestions for further research

The research question that I set out to answer in my master's thesis was: *does inequality affect democracy?* To answer this research question were three purposes formulated; first to test competing established theories on the relationship between inequality and democracy, this since previous studies have failed to come to any consensus on the relationship. Second, to introduce an alternative operationalization of inequality, this because the quality of the data on previously used variables has been widely questioned. Finally, to investigate the effect of inequality on democracy over time, this because it is an aspect that has been missing in previous research.

The main conclusion that I draw from my results is that I find no support for the recognized theories of any relationship between the established ways on operationalizing inequality, using the Gini coefficient and percent of family farms, and democracy. However, when I use the alternative way of operationalizing inequality I do find a relationship in line with the established theory by Boix (2003). I thereby conclude that this alternative way of measuring inequality might be a good alternative way of measuring inequality. The use of this alternative measurement helps to understand the relationship between inequality and democracy but it could also be useful for other fields of research that investigate the effects of inequality. I also conclude that inequality has changing effects on democracy over time. This result proves that we cannot look at inequality as a static variable that does not change but need to see that inequality has changing effects over time.

The short answer to my research question is therefore, yes inequality seems to affect democracy but how and when depends on how inequality is measured.

7.1 Conclusions on the different purposes

The first purpose of my study is based on the numerous theories of the existence or not of a relationship between inequality and democracy. The literature review divides the previous literature into three groups; the authors who find no relationship between inequality and democracy; the authors that find a negative relationship and, finally; the authors that finds a more complex relationship between inequality and democracy. In order to be able to answer the question of which theory in the literature that best explain the relationship I used a time series cross section regression model with fixed effects and clustered standard errors. I use this type of regression model since the data is in a time series form.

Boix (2003) presents a theory where high economic inequality should have a negative impact on democracy. I test this theory by using the above described model. The

results from the analysis, see Table 4, shows that the Gini coefficient, which is a measurement of income inequality, had no significant relationship with democracy level. These results are in opposition to what has been found and argued by for example Boix (2003). However, are my results in line with the findings in the studies by Haggard and Kaufman (2012) and Teorell (2010) where no relationship is found.

Ansell and Samuels (2010) argues that different types of inequality, land inequality and economic inequality, affect democracy in different ways. I therefore test if land inequality and economic inequality has different effects on democracy level. The results, found in Table 4 and 5, show that neither economic inequality, operationalized as the Gini coefficient or land inequality, operationalized by the percent of family farms variable, has any significant effect on democracy level.

The final theory to be tested in this master's thesis is the relationship between inequality and democracy presented by Acemoglu and Robinson (2006) and Burkheart (1997). According to these authors should the relationship between inequality and democracy be an inverted U-shape. To test this theory are squared variables of the Gini coefficient and the family farms variable used as independent variables. The results, found in Table 4 and 5, show that neither of these variables have any significant effect on democracy level.

Based on these results I conclude that neither of the established theories of a relationship between inequality and democracy in the literature holds according to my study. The group of literature that seems to be the most accurately describing the relationship are the studies by for example Teorell (2010), Haggard and Kaufman (2012), and Houle (2009) that finds no relationship between inequality and democracy.

The reason for the null finding of a relationship between inequality and democracy level could have to do with the limited data on the independent variables, the Gini coefficients and the family farms measurement. Studies by Houle (2009) have argued that the data on inequality have serious flaws and perhaps is this also the case for my study. For example, is the family farm variables only containing 666 observations. A way to solve this data limitation could be to further interpolate the variable to increase the number of observations, something that however, would mean creating a large amount of the data. To draw conclusions based on manufactured data is perhaps just as bad as having little data to begin with.

Another possible way to deal with the data limitation on inequality is to find an alternative way of measuring inequality, one where data is widely available and there is transparency on how it has been collected. This is the reason behind the second purpose of my

thesis, to introduce an alternative measurement of inequality. I choose to use the V-Dem *egalitarian democracy index* since this and the subcomponent index, the *equal distribution of resources index*, measures if several resources in society are equally distributed. I construct new theoretical arguments behind why and how these indexes and the indicators that make up the indexes should be associated with the democracy level and I formulate testable hypotheses based on these theoretical arguments. The results in Table 6 show that the *egalitarian democracy index* has a significant effect on democracy level. The *egalitarian distribution of resources index* also has a significant effect on democracy level. Both these indexes have a positive effect, which is what would have been expected according to theories by Boix (2003). However, as I discussed in the analysis and results chapter might this large result be an effect of a correlation between the indexes and the measurement of democracy level.

I used the indicators that make up the *equal distribution of resources index* as independent variables due to this concern of a high correlation between the measurements. My results show that the majority of the indicators had a significant effect on democracy level. *Universal healthcare* and *public spending* had a significantly positive effect on democracy level. The hypothesis was however that the effect would be negative since the want for democracy would be smaller when people have universal healthcare and a large public spending. The *indicators of power by socioeconomic group*, *power by social group* and *power by gender* all had a significantly positive effect on democracy level. Which is in line with the theoretical prediction and the hypotheses.

I conclude that some of the V-Dem indicators, for example the *equal distribution of resources index* and the *indicators of power by socioeconomic group*, *power by social group* and *power by gender*, could be used as a measurement of inequality. To use the V-Dem indicators as established measurements of inequality would come with the benefits of being both highly reliable and containing a complete dataset with most country-years available.

The final purpose of my thesis was to investigate the effect of inequality on democracy level over time. Teorell (2010, p. 155) points out that most studies have investigated the effect of inequality on democracy on a very long or a very short time frame. Teorell (ibid) raises the need for a study that investigates the intermediate time frame. My study picks up on this question and investigate the effect of inequality on democracy over time by using the lagged effect of all the previously discussed measurement of inequality. I further motivated this investigation over time since previous studies assumed inequality be not change over time and thereby had measurement at different points in time been used (Bollen and Jackman, 1985).

I use lagged variables of the different operationalization's of inequality as independent variables since I then can investigate if they have a significant effect on democracy level. The results can be found in Graphs 2-11.

I find that the measurements of inequality have different effects over time. For example, has the Gini coefficient no immediate effect on democracy level, but it has a positive significant effect after 10 years. The family farms measurement of inequality however, barely has any significant effect on democracy level at any point in time. The *egalitarian democracy index* and its subcomponents and indicators all show different patterns of the effect on democracy level over time. From these results I conclude that the use of lags illustrate that inequality has very changing effects on democracy levels over time, an idea that has not been explored in previous studies but that needs to be explored further in future research.

7.2 Concerns

One of the larger challenges with the research field on democratization is the potential bidirectional nature of the relationship between the dependent variable, democracy, and the independent variables. My thesis as well face this challenge since it is possible that democracy affect inequality level and inequality affect the level of democracy. This means that even though I find some significant effects of inequality on democracy I cannot say that I have found inequality to be a cause of democracy. However, I can conclude and contribute with that some operationalization's of inequality has the significant effect on democracy as established theory predict, but I cannot say that increased inequality causes democracy levels to increase.

Another challenge with my study is of a pure methodological nature. I chose to use a time series cross section regression model with fixed effect since this model had been used in other studies working with the V-Dem data. I furthermore argued in favor of a fixed effect model since this model allows the unobserved effect to be correlated within units of observation, here countries (Fortin-Rittberger 2015; p. 396). It is realistic to assume that there are some omitted variables that are specific to the units and that these varies between the units. However, it would be a good idea for future research to perform a Hausman test to statistically determine if a fixed effects model or a random effects model should be used (Fortin-Rittberger 2015; p. 396). One problem with the fixed effect model is the loss of degrees of freedom and efficiency in the model.

Further suggestions for similar studies would be to use panel corrected standard errors to deal with problems such as panel heteroskedasticity or contemporarily correlated

errors in the data (Fortin-Rittberger 2015; p. 397). It would also be useful for future research to include a lag of the dependent variable in order to deal with any serial correlation in the data (Fortin-Rittberger 2015; p. 392).

7.3 Suggestions for further research

The link between inequality and democracy has been explored in many papers, books and also in this master's thesis. There are however still many gaps that could be explored by future research. One suggestion for future research is to try to establish the causal mechanism to properly deal with the reversed *causality* issue. To prove a causal link between inequality and democracy was not the purpose of this master's thesis, but it is still a topic that I think needs to be more investigated to further understand the link between inequality and democracy. To investigate the causal direction of the relationship between inequality and democracy could perhaps an instrumental variable approach be used. However, what to use as an instrumental variable remains to be explored by future research.

Another idea for future research is to explore different measurements of democracy to see if the way of operationalizing and measuring democracy has any effect on the results. It would furthermore be interesting to investigate a longer time period since it then would catch the different waves of democratization. Perhaps is inequality effecting the different waves of democratization in dissimilar ways.

Like previously discussed is another possible way forward to develop some of the V-Dem indicators into established alternative measurement of inequality. This would however require a validation of the V-Dem indexes, perhaps by using them in order to test well-known relationships with inequality. If the V-Dem indicators produce similar results as other measurements, but with the benefits of widely available and complete data, could this be seen as a validation of using the V-Dem indicators as a measurement on inequality.

7.4 Concluding remarks

The results from my thesis does not only contribute to the research field of democracy and inequality but as well has external use. Thru my thesis can policy makers and people outside academia further understand what effects the level of democracy in countries. The results of my master's thesis can lead to new ideas on how to promote democracy by for example ensuring an equal distribution of power between socioeconomic groups, social groups and gender.

My results of the possibility to use an alternative measurement of inequality can as well be beneficial for policy makers and other actors since the trouble of measuring inequality as well is a problem outside academia.

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Appendix A

Table 1. Table of the papers included in the literature review.

<i>Study</i>	<i>Inequality data</i>	<i>Method</i>	<i>Effect of inequality</i>	<i>Inequality different effect over time</i>
<i>Bollen and Jackman (1985)</i>	Income quintiles (World Bank, N60)	Weighted 2SLS	None	No, but the measurement for inequality is assumed to not change over time
<i>Muller (1988)</i>	Income Gini, income quintiles (World Bank, N33)	Bivariate reg.	None democratization, negative consolidation	No, but the measurement for inequality is assumed to not change over time
<i>Bollen and Jackman (1995)</i>	Income quintiles (World Bank, N60)	OLS, robust regression and median regression	None	No, but the measurement for inequality is assumed to not change over time
<i>Fish and Choudhry (2007)</i>	Gini coefficient, change in Gini (Various sources, N 151-162)	Engle-Granger analysis	None	No
<i>Houle (2009)</i>	Capitals share of income in manufacturing sector (Ortega & Rodriguez, N 30439-4029)	Dynamic probit	None	Inequality is lagged one year
<i>Teorell (2010)</i>	Gini (Galbraith and Kum, N)		None	Inequality is lagged one year
<i>Haggard and Kaufman (2012)</i>	Land inequality (Vahanaen) Gini (EHII) (N 86)	Causal process observation	None	No
Muller (1995) A and B	<i>Income Gini, income quintiles (World Bank, N64)</i>	<i>OLS</i>	<i>Negative</i>	<i>Inequality is lagged one year</i>
<i>Feng and Zak (1999)</i>	Income distribution (D&S N680)	Survival analysis	Negative	No
<i>Zak and Feng (2003)</i>	Theoretical paper		Negative	No
<i>Barro (1999)</i>	Income Gini income quintiles (D&S, N303)	Seemingly unrelated reg. (SUR)	Negative	No

<i>Boix (2003)</i>	Income Gini (D&S, N1042) % family farms	Dynamic probit	Negative	
<i>Ziblatt (2009)</i>	Land inequality (N4272)	Time series cross-sectional regression	Negative	No
<i>Acemoglu and Robinson (2000, 2001 and 2006)</i>	Theoretical papers and case studies	Only theoretical paper and case studies	Inverted U-shape	No
<i>Burkhart (1997)</i>	Income quintiles (World Bank, N224)	2SLS	Inverted U-shape	No
<i>Ansell and Samuels (2008)</i>	Income Gini (B&M, N4728) % family farms	Dynamic probit	positive (income) negative (land)	Gini from 20 years ago is used as instrumental variable- but then disregarded
<i>Midlarsky (1992)</i>	Land Gini (N72) agric. density (N97) Income quintiles (World Bank, N55)	OLS	Positive (land) none (income)	No
<i>Perotti (1996)</i>	Income quintiles (Jain and Lecaillon et al., N 49)	Reduced-form regression	Income inequality associated with less political stability	No
<i>Alesina and Perotti (1996)</i>	Income quintiles (Jain and Lecaillon et al.,N71)	2SLS	Income inequality leads to social discontent	No
<i>Dutt and Mitra (2008)</i>	Income quintiles (World bank and Dollar and Kray, N 52-72)	OLS and instrumental variable regression	Income inequality leads political volatility	No, Gini is averaged over the time period of 1960-2000
<i>Rueda and Stegmuller (2016)</i>	Regional Gini coefficient (European Social Survey (ESS) ,N 129)	Maximum likelihood	Higher income inequality leads to preference for redistribution	No

Table based on Houle (2009), with supplements

Appendix B

Correlation matrix between all independent variables

	<i>Polity</i>	<i>Gini</i>	<i>Family farms</i>	<i>Egalitarian democracy index</i>	<i>Equal distribution index</i>	<i>Particularistic or public goods</i>	<i>Universal welfare</i>	<i>Educational inequality</i>	<i>Health inequality</i>	<i>Power by socioeconomic group</i>	<i>Power by social group</i>	<i>Power by gender</i>
<i>Polity</i>	1											
<i>Gini</i>	-0.1202	1										
<i>Family Farms</i>	0.3546	-0.2752	1									
<i>Egalitarian democracy index</i>	0.7934	-0.3076	0.4775	1								
<i>Equal distribution index</i>	0.5185	-0.4236	0.3768	0.8201	1							
<i>Particularistic or public goods</i>	0.4338	-0.2975	0.3732	0.6985	0.7793	1						
<i>Universal welfare</i>	0.2240	-0.2620	0.1643	0.4733	0.6824	0.6704	1					
<i>Educational inequality</i>	0.4184	-0.4630	0.3818	0.7400	0.8990	0.6018	0.5342	1				
<i>Health inequality</i>	0.4869	-0.4210	0.3939	0.7841	0.9349	0.6893	0.5969	0.8963	1			
<i>Power by socioeconomic group</i>	0.4170	-0.4183	0.3448	0.6599	0.8190	0.6836	0.5859	0.6643	0.6866	1		
<i>Power by social group</i>	0.5608	-0.2755	0.3895	0.7554	0.7117	0.5490	0.3738	0.5940	0.6069	0.6109	1	
<i>Power by gender</i>	0.4812	-0.3663	0.3438	0.6552	0.7176	0.5896	0.5460	0.5832	0.6083	0.6640	0.6395	1