

Thorkildsen, Thea Marie

## Do inequalities breed political Terror?

An Instrumental Time-Series Cross-Section study on Inequality and Physical integrity rights violations

Master's thesis in Statsvitenskap(MPOL)

Supervisor: Butcher, Charles

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## Abstrakt

Hvordan påvirker ulikhet statlig terror? Mye av litteraturen har fokusert på flere av de negative konsekvensene ulikhet kan ha, gjerne i henhold til institusjoner, borgerkrig og demokrati, men få har adressert sammenhengen mellom ulikhet og undertrykkelse. Færre har prøvd å se på ulikhet og undertrykkelse og prøvd å undersøke endogenitetsproblemer knyttet til dette, somomvendt kausalitet og eller forventningsskjevhet knyttet til en utelatt variabel. Denne studien ser på hvor vidt flere former for ulikhet påvirker statlig undertrykkelse, samtidig som den forsøker å undersøke om sammenhengen fremdeles eksisterer etter å ha kontrollert for faktorene knyttet til endogenitet.

Studiens teoretiske rammeverk er basert på frustrasjons-baserte (Grievance-based) og institusjons-baserte (institutional-based) mekanismer som begge gir en forklaring på hvordan økt ulikhet kan få stater til å undertrykke. Begge teoriene legger vekt på at undertrykkelse er en strategi politiske ledere først og fremst bruker for å holde på makten og godene det medfører. I tillegg til disse teoriene bruker jeg og teorier som knytter kolonitid til dagens strukturelle ulikhet, med hovedvekt på Engermann og Sokoloff sin hypotese. Det er også basert på denne hypotesen jeg forsøker å undersøke potensielle problemer knyttet til endogenitet.

Jeg gjør tre naive tidsserie-regresjoner, etterfulgt av fire to-steps regresjonsanalyser med en instrumentell variabel. Jeg bruker et mål som måler andel landområder egnet for enten hvete eller sukker, og et annet mål knyttet til kunstige grenser (Artificial borders). Funnene peker i retning av at ulikhet påvirker undertrykkelse. Etter å ha gjennomført en rekke sensitivitetsanalyser, er det økonomisk ulikhet som ser ut til å være mest robust. Studien tyder da på at vi ikke kan ignorere ulikhet som en viktig faktor, om vi ønsker en forbedring i hvordan menneskerettigheter respekteres.

## **Forord**

Det siste året har vært full av opp og nedturer. Skrivning og utforming av master har vært utfordrende og slitsomt men samtidig lært meg selvstendighet å utøving av tålmodighet. Gjennom å skrive master har jeg forbedret min metodologiske forståelse og oppnådd ferdigheter som hjelper meg i å sette meg inn i nye metodiske perspektiver.

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Thea Marie Thorkildsen

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## 1.0. Introduction

How does inequality affect physical integrity rights practices? If it does, what kind of inequality matters and in what degree does it affect physical integrity rights? Rising inequality is a widely discussed topic in the development literature (Stewart, 2017). Previous studies have focused on inequality in relation to institutions, civil war, development, and democracy (Collier 2010, Østby 2008). Nevertheless, few empirical studies have looked at inequality and repression explicitly, and of current knowledge, no empirical research has adequately addressed the endogeneity of different inequalities to repression (Landman 2006, Rørbæk and Knutsen 2017). Most scholars agree that inequality can be problematic, but they disagree on how severe these problems are (Muller and Seligson, 1987; Boix, 2008; Stewart, 2016). Modernization scholars discuss the negative impacts in terms of economic growth and state instability (Muller and Seligson, 1987; Østby, 2008; Acemoglu and Robinson, 2013). High inequality is also associated with problems like higher poverty rates, higher child mortality and a higher levels of illiteracy (UNDP, 2014; Stewart, 2016). Recently, the issue has also been allocated more attention in the political community and it has become prominent in the UN Sustainable Development Goals 2014, where inequality reduction is a specific goal (UNDP, 2014). In the political violence literature and democracy literature, the negative impacts of inequality have been more difficult to uncover. In the civil war literature, the results of inequality are mixed, where some have found significant connections to civil war and others have not (Collier 2010). In the democracy and repression literature, studies have pointed out that inequality is positively related to the transition to democracy while others have pointed out that inequality is related to the reversion to autocracy (Ansells and Samuel. 2010). Other scholars again have failed to find a link at all (Acemoglu and Robinson 2003, Svobik 2011, Haggard and Kauffman 2016). Scholars like Acemoglu and Robinson (2012) argue that the link between inequality and repression is more circular, whereby inequality affects repression and repression sustains the level of inequality, which again is rooted in institutions from the colonial period. This makes the causal chain even more difficult to establish since it is difficult to understand whether inequality or repression came first. Therefore, it is important to examine whether a relationship exists between inequality and repression after dealing with endogeneity issues.

This paper attempts to study two things: (1) if different types of inequality can be linked to the level of repression and (2) if the link stays significant with an instrumental variable approach.



Some literature examines how structural factors link to state repression but mostly in terms of institutions and economic growth. (Poe, Tate, and Keith, 1999). Except for a few studies, the literature has, for the most part, ignored the link between inequality and repression (Landman 2006). Inequality is often discussed in terms of democratic institutions (Kauffman and Haggard). For example, Acemoglu and Robinson (2006) argue that inequality creates a trade-off between repression and democratization, which was put to the test by Haggard and Kauffmann (2016), who did not find a statistical link between inequality and transitions to democracy. This paper, however, stresses the importance of looking at democracy and repression separately. This because democracy does not necessarily predict low repression and autocracy does not necessarily predict high repression. Brazil, for example, has a polity score of 8 out of 10 but still ranks as a 4 on the Political terror scale, where 5 is considered the highest level of repression. Another example is Colombia which has a polity score of 7, and is then recognized by polity as a democracy, but has still an average PTS score of 3,5 (Marshall, Jaggers and Gurr 2017, Gibney 2018). On the opposite side, Guinea- Bissau has a Polity score of 2 and a PTS score of 1. A fourth example is Bhutan, which has a Polity score of 5, and a PTS score of 1. Although democracy and the respect for physical integrity rights are significantly correlated with each other, the correlation is not perfect, and there are several cases that diverge from the claim that democracy predicts better human rights practices. This suggests that we should treat repression as distinctive from democracy.

To put this claim to an empirical test, I use the Political Terror Scale (PTS)<sup>1</sup>, the Physical Integrity Rights Index (PIR)<sup>2</sup> and the new human rights index from Fariss (2014) as measures for state repression. I test the effects on a measure for economic Vertical Inequality (VI), gathered by the World Bank, and two measures for Horizontal Inequality (HI) created by Buhaug et.al (2014). I further include two measures of equality looking at power distribution in relation to social classes and social groups. VI is defined as the economic or political inequality between individuals, and HI is defined as the economic or political inequality between ethnic or social groups. I conduct three types of “naïve” regression analysis to test the proposition that inequality causes repression. The first is an ordered probit where I analyze the relationship between the PTS score and inequality. The second is an OLS time-series cross-sec-

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<sup>1</sup> From here on PTS

<sup>2</sup> From here on PIR

tional regression, where I use PIR as the dependent variable and different measures of inequality as the independent variable. The third analysis also uses OLS, where I use the new human rights index by Fariss (2014), which has been shown to be less biased than other human rights measures as the PTS or CIRI index in terms of measuring human rights violations. The models consist of 158 countries covering the period from 1990 to 2015. The findings of this study show that both VI and HI are associated with a higher level of state repression.

Studies of inequality and repression still suffer from endogeneity concerns. These come in two flavors: first is the problem of reversed causality, which entails that inequality might be caused by repression. Due too the fact that inequality often is related to political decisions. Second is the omitted variables problems, whereby unobserved confounders can affect repression and are also correlated with inequality. Without being able to assign the cases randomly I cannot know if it is the level inequality that causes repression or if it is repression that cause inequality. This leads me to examine the endogeneity concerns further.

To examine the endogeneity issues related to inequality and repression, I use exogenous variation from land suitability for wheat or sugarcane production as an instrumental variable for inequality with the goal to estimate the impact of inequality on state repression (Easterly 2007). Suitability for wheat and sugarcane is a plausible instrument to predict inequality because it captures inequality that is related to longer term structural factors, rather than market-based factors that fluctuate in the shorter term. This because historical research and statistical research finds that land endowments that were related to sugarcane production, were associated with labor intensive plantation economies and then further associated with a high level of inequality (Easterly 2007, Nunn 2007). I also include an alternative instrument which is the fractal index on artificial borders, which also may predict inequality. An instrumental variable approach allows me to get a more precise estimate of the link between inequality and repression. Therefore, this paper relates to theoretical claims of Acemoglu and Robinson (2003) and Svolic (2012) and builds on the empirical approaches of previous scholars as Miguel, Satyanath and Sergenti (2003), Easterly (2007) and Whucerpennig, Hunziker and Cederman (2016) who also address the issue of endogeneity by using an instrumental variable method in studies of inequality and political violence.

The findings are mixed after I have conducted sensitivity analyses but suggest empirical support for the claim that at least vertical inequality, inequality in terms of inequality in power-distribution do influence the level of state repression.

This paper consists of four parts. The first part provides the introduction of the concepts repression and inequality. This is followed by a summary of previous studies, explaining why states abuse their citizens and possible factors that can increase the level of perceived domestic threat, including economic inequality and civil war. I then outline the theories and mechanisms explaining the link between inequality and repression. Further in the next section I introduce my main variables and how they are operationalized, introducing the three repression measures chosen for this study, and then the six inequality measures. I then introduce the problem of endogeneity and how my research design deal with this. Further, I will explain the regression models used in this paper. In the fourth section, I will present the “naïve” regression analyses, one ordered probit and two OLS- regressions, followed by the instrumental variable approach where I use the instruments wheat-sugarcane ratio and artificial borders, followed by the various sensitivity analyses. In the last section, I will discuss and conclude my study, arguing that future research should allocate more attention towards the link between inequality and state repression. This research has important theoretical implications since it questions the proclaimed insignificance of inequality and its impacts on growth, stability and democratic institutions. Repression - like low economic growth, instability and autocratic institutions – seems to be part of the same structural problems related to high inequality. (Collier 2003, Miguel 2004, Haggard and Kauffmann 2015). Furthermore, it implies important policy implications regarding a wide range of countries in the developing world and that we cannot ignore the impacts of inequality if we are to help the developing world.

## 2.0 Theory

In these sections, I introduce the two core concepts of my analysis, repression and inequality. Repression is defined in relation to violations of physical integrity rights or political terror. Inequality is defined in terms of vertical and horizontal inequality, which again can be defined in terms of economic and political inequality. First, I explore in general why states would want to repress. Following this, I will discuss the theoretical mechanisms explaining the link between inequality and repression. I first introduce and discuss the grievance-based mechanism, followed by the discussion of the institutional mechanism. I discuss the link between

inequality and repression with a heavy reliance on the democratization and civil war literatures.

## **2.1 Repression**

The concept of repression includes the persecution of citizens and restriction of their freedoms. Repression is used when the political leadership wants to prevent someone from participating in political dissent through either protests, demonstrations or revolt. The concept is often used in relation to dictatorships and autocracies, usually to eliminate the (real or imagined) threat from a social group or an opposition group, and is often related to the restriction of human rights. The actions of repression are usually implemented by the states' police force or military. This paper adopts the definition of repression developed by Poe and Tate (1994, p. 3), who argue that repression is "a category of coercive activities on the part of the government designed to induce compliance in others". This kind of repression includes murder, torture, and imprisonment of people for dissent. These activities are also mainly related to non-combatant members of society.

This paper sees repression and autocracy as related but distinctive entities. Although many democracies are fair and respectful of their citizens' physical integrity, not all democracies respect these integrity rights. Also, although many autocracies repress more than their democratic counterparts, not all autocracies rely to the same degree on repression (Collier, PTS-scale). Bhutan is considered by Polity as semi-autocracy, but has low level of repression, for example. Moving further, the concept of repression and political terror must be separated from the term of genocide which often has the intent of group eradication (Straus 2004).

## **2.2 Inequality**

The most widely used definition of inequality is linked to economic distribution among people either in terms of income or of public goods. The concept of inequality also captures differences in opportunities in society, concerning access to certain jobs, education or political influence. This paper defines inequality in terms of three areas: (1) unequal income distribution, (2) unequal power distribution and (3) unequal access to public goods and other state services. The focus of this dissertation will mostly be in relation to 1 and 2. The most researched topic is economic inequality among people or households. This type of inequality is labeled as vertical inequality, where the best-known measure is the Gini coefficient. Inequality

can also be of concern regarding social, religious or ethnic groups in a society. In some countries, like in the Sub Saharan African-region, inequality among ethnic groups can be of greater importance than inequality among individuals (Cederman et.al 2011, Østby 2008, Stewart). Examples of countries with high inequality between social groups include South Africa that had a high level of inequality between the white minority and the black majority, concerning both economic rights and political rights. Another example of inequality among ethnic groups can be Zimbabwe and Rwanda. Rwanda is a good example of systematic horizontal inequality, where the two most known groups are the Tutsis and the Hutus. During the period from 1956 to 1994, the Tutsis were the in-group and the considered elite, while the Hutus were the out-group. The inequality between these two groups are often seen as one of the primary sources of the conflict and the genocide of Tutsis in 1994 (Straus 2004, Acemoglu and Robinson 2012). This type of inequality is labeled as horizontal inequality (Esteban and Ray 1994, Buhaug et.al 2011).

Moving further, scholars disagree on how to operationalize inequality ( Deininger and Squire, 1996, Piketty 2003, Østby 2008, Cederman et.al 2011, Houle 2015, Starmans, Sheskin and Bloom 2017). Some argue that the main concern should be income inequality since this type of inequality is easier to study in relation a person's well-being (Alesina and Perotti 1994, Alesina, Di Tella and Maculloc 2001, Piketty 2003 They propose further that this type of inequality can be directly linked to the perception of unfairness which may lead to grievances (Gurr 1986, Cramer 2005, Goldstone 2014)). Others argue that the problem of inequality does not lie in income per se, but in inequalities in the manner of outcomes and opportunities ( Hirschman and Rothschild 1973, Solt 2015, Stewart 2017). Access to health services, health care, and other public services may also be seen as more relevant aspects of inequality. In studies of vertical inequality, the Gini coefficient of income inequality is usually the preferred measure since it is thought to be, although criticized, a fairly good indicator of income inequality. The measure is also used as a proxy for institutional problems concerning inequality. A high Gini coefficient is often correlated with bad distributional policies in terms of welfare, health services and education. (Easterly 2007). However, as all measures the Gini coefficient has limits. First, it does not measure unequal wealth in an absolute sense but in a relative sense. If a country experiences economic growth, the share of the poor living in absolute poverty may decrease significantly, but the relative measure, Gini coefficient, may increase,

which may give a misleading picture that the economic status is worse today than it was before. The Gini coefficient is also not designed to capture aspects like equal opportunity, life quality, and development in a country, which some scholars argue are important aspects to consider when looking at inequality. Switzerland and Nepal have a similar Gini coefficient of 32, but Switzerland has a more inclusive welfare system than Nepal, showing that income inequality doesn't capture the whole picture of inequality. Secondly, Gastwirth (2017) found that the Gini coefficient is highly sensitive to changes in the lowest and upper parts of the index. Still although not perfect, research has shown that overall, the Gini coefficient is a good measure for predicting development (Easterly 2007).

Moving to horizontal inequality and measurement, the question is more complex since these types of inequalities have been argued to be more difficult to measure, especially on the country level, at least in terms of horizontal economic inequality (Cederman et.al 2011, Houle 2015). Some measures are based on different surveys like the Demographic and Health Survey- project (DHS) or Afrobarometer, where some of the limits are that they primarily select on developing countries and the number of responses tends to vary from area to area, country to country which may lead to biased estimates (Cederman et.al 2011, Houle 2015). Two examples of measure that are based on surveys are the between group inequality measures (BGI) and within group inequality measures, (WGI) which are based on the weighted average of group-level indicators on between group inequality. Houle (2015, p. 31) also argues that these measures may be affected by problems of endogeneity which is hard to account for since it is "difficult to instrument for BGI since it would require instruments correlated with BGI and WGI for each ethnic group", which is not available. This is the reason why I do not include BGI or WGI in my study. Other horizontal inequality measures are based on economic activity in a geographic area, but these often seen as problematic in terms of measuring wealth inequality and difficult to aggregate to the country level (Cederman et. al 2011). These measures are also often time-invariant which may be a problem since inequality may be affected by economic growth and the growth rate vary from country to country.

Horizontal inequality can also be measured politically, which is easier to detect in terms of ethnic inclusion or exclusion from government decisions. Still this is also often difficult to aggregate to country level data. There are still some measures on the country level that capture the degree to which ethnic groups are excluded and the size of the largest discriminated

group. One issue with these variables is that they are based on the Ethnic power relations-data (EPR) which only include politically relevant groups and not all ethnic groups. This can be a problem because it may be more difficult to estimate the substantive effects of horizontal inequality, since 1) its estimates are mostly based on sub-sample data, and 2) you don't measure the total level of horizontal inequality. (Buhaug et al 2014, Whucerpennig et al 2016, Stewart 2017). Political horizontal inequality is often related to political inequalities in terms of power-sharing, discrimination, and exclusion which have had a negative effect on these social groups' outcomes in relation to economic inequalities (Acemoglu and Robinson 2012, Whucerpennig 2016, Houle 2015, Rørbæk and Knutsen 2017).

Based on these general principles of inequality this paper defines vertical inequality in terms of 1) income distribution and 2) power distribution among individuals. The paper further defines horizontal inequality in terms of 3) ethnic discrimination and exclusion from politics and, 4) distribution of power among social groups. The operationalization and measurement of these concepts will be more thoroughly discussed in the method section.

### **2.3 Why do states repress?**

This section outlines existing theory on why states repress their populations. To understand the rationale for repression, one should understand that repression is not seen as the ideal solution to tackle dissent. One way to conceptualize repression is that a regime consists of rational actors who repress not because they want to, but because it seems necessary (Poe et al, 1999; Poe, Vazquez and Carey, 2001; Poe, 2004; Svolik, 2013). According to Poe et al (1999), Svolik (2013) and Bueno de Mesquita & Smith (2011), repression is an effective means to stay in power and remain in control of the population. There are several factors that might make the political leadership repress, but "the most pervasive... is the existence of threats, real or perceived to leaders" (Poe et al, 1999, p293). The threat of a political opposition that may want to overthrow the political regime incentivizes the political leadership to utilize various strategies of repression in order to stay in power (Gurr, 1986; Moore, 2005; Landman, 2005; Poe, Carey and Rost, 2006; Svolik, 2012). The biggest threats for leadership are protests, international war and civil war.

Svolik (2012) argues that the decision to repress is related to the problems of authoritarian rule: what he calls “the problem of authoritarian control” is usually a common source of political conflict. The problem of authoritarian control is that it exists a conflict between a small elite and the population (Svolik,2012; Bueno de Mesquita and Smith 2011). To tackle the threat of the people, the ruling elite chooses between two strategies: co-optation and repression. Usually, the ruling elite wants to avoid repression, because a heavy reliance on repression leads to what Svolik (2012) calls the moral hazard. This moral hazard can be defined as the situation where "the very resources that enable a regime's repressive agents to suppress its opposition also empower it to acts against the regime itself" (Svolik,2012, p10). Studies show that a heavy reliance on repression results in a higher risk of military intervention and coup de etat. If the cost of repression is perceived to be higher than co-optation, the regime is more likely to co-opt than repress.

Repression is used in reaction to dissent. Davenport (2007) has shown repression increases when a country experiences civil war or mass protests. Scholars disagree on what makes a leader choose a specific strategy, however. Some argue that co-optation is used if the cost of co-optation is not high, but others like Moore (2000, p. 120) argue that political leaders “tend to substitute accommodation for repression and repression for accommodation when either tactic was met with dissent”. Therefore, he argues that the strategy used is not based on the cost of the strategy per se, but how it is received by the population.

Some have argued that it is regime type that affects repression. Carey (2009, p4) argues that:

“clearly, the nature of the political regime has an important influence on a government’s use of repression. Political regimes reflect the norms and guide political interactions and the institutions through which those interactions are channeled. They determine the levels of power and force that can legitimately be uses against citizens, and facilitate the accommodation of opposition grievances. Democracies are generally associated with non-violence..”

She also showed that countries in the top levels of democracy on the polity-scale in Latin America were more likely to have lower levels of repression than countries with lower levels of democracy (Carey,2009). Although regime type may explain some of the repression levels,



it does not explain all of the cases. Carey (2009) finds that political leaders in semi-democracies and democracies are less likely to use widespread repression in terms of political killings, since it increases the risk of dissent and large-scale protests. Therefore, they are more likely to use more hidden forms of repression as disappearances as torture (Davenport 2007, Carey 2009). Davenport (2007) argues that democracy does not affect the level of repression linearly, but above certain threshold on the polity index repression becomes less likely. However, Davenport (2007) argues that the relationship between democracy and repression is still inconclusive. Underdevelopment and a lack of economic growth are also factors that are related to high repression, but do not tell the whole story as China, which is one of the fastest growing countries in the world, also has a high level of repression. (Davenport 2007, Svobik 2012). Many of the later studies frame the level repression in relation to the cost, the probability of success and what the political leaders can get away with (Davenport 2007)

One of the core findings in relation to repression seems to be that repression is result of a real threat or a perceived threat, but as Davenport (2007) points out, it is not clear how real this threat needs to be, and in what degree the political leader perceives the threat.

This leads me to consider other aspects concerning why state actors repress. In the next sections I will examine this issue further, in terms of inequality and repression. The first section will examine the literature in relation to grievance-based theories. In the section after that I will examine institutional based theories.

## **2.4 Inequality and repression**

I argue that there are two important arguments that suggest why inequality leads to repression and not vice versa (1) the grievance-based mechanism and (2) that the decision to use repression is linked to the institutional mechanism. I also argue that inequality causes repression and not the other way around because the origins of some forms of inequality lie in the distant past. The grievance-based mechanism is presented, since it explains the direct effect of inequality, since it affects revolts which again may make the political leader repress. This mechanism explains repression as the immediate reaction to peoples dissent, and how the political leaders have to repress in order to stay in power. The institutional mechanism on the other hand explains how the institutional structures explain the political rule's behavior. This mechanism

explain repression in the light of how the institutions incentivizes the elite to repress. Here repression is seen as a response to a latent threat and not the absolute threat

I argue further that the grievance-based mechanism and the institutional mechanism are rooted in forms of inequality that lie in the distant past. The argument I make is based on the works of Engermann and Sokoloff (2002), Easterly (2006), Acemoglu and Robinson (2001, 2006, 2012) and Wuchperfennig et.al (2016) that argue that structural inequality can be traced back to the colonial period which affected post-colonial institutions. My argument is that historical structures predict in greater detail the level of inequality than the contemporary repressiveness of a regime causes inequality. Dictators and political regimes come and go, but the structures are more stable over time and harder to change. This is the first and most important argument for why inequality cause repression and not the other way around.

## 2.5 Mechanisms linking inequality to repression

Moving further into the debate on political terror, another perspective is economic inequality. Much research finds that economic inequality has a link to political instability, especially in the civil war literature. (Collier,2010; Buhaug. et al 2014). Research also finds a link between repression and civil war (Gurr,1970; Gurr,1973; Reagan and Norton,2005). Therefore, studies of inequality and civil war may be transferable to the study of repression (Besley and Persson, 2009). This section looks at different explanations for why inequality may affect the level of state repression. The first part of the section explains inequality in terms of grievance-based theories, both related to vertical and horizontal inequality. The second part of this section is related to the importance of political institutions, and how bad political institutions are related to unstable economic growth and inequality. I examine further how this creates an environment that incentivizes repressive strategies.

### 2.5.1 The grievance mechanism

Studies linking inequality to repression often see repression as one of the tools for staying in power, where co-optation and redistribution are the other strategies (Acemoglu and Robinson 2006). Besley and Persson (2011) argue that to study instability and political violence, we

need to treat repression and civil war as one entity. Therefore, I first explore the literature concerning inequality and civil war as relevant to the question of repression. To study inequality and civil war, much of the literature has used two main constructions of inequality. The first one is vertical inequality, which looks at inequality between people. The second construction is horizontal inequality, which looks at inequality among social groups (Collier and Hoefler, 2003; Collier, 2010; Buhaug et al., 2014). Many scholars believe that inequality may lead to a greater risk of political violence, mainly civil war (Besley and Person, 2011). Inequality seems to induce discontent and grievance, and as the grievance grows, onsets of civil war become more likely (Davies, 1962, Muller and Seligson, 1987, Cederman, Weideman and Gleditch, 2011). Gurr, (1968, 1970) argued that when people experience relative inequalities which leads to frustration and dissent in people. He argues:

“the primary source of the human capacity for violence appears to be the frustration-aggression mechanism... If frustrations are sufficiently prolonged or sharply felt, aggression is quite likely, if not certain, to occur... The frustration-aggression mechanism is in this sense analogous to the law of gravity: men who are frustrated have an innate disposition to do violence to its source in proportion to the density of their frustration” (Gurr, 1970, p36-37).

In this perspective the frustration is created by economic inequalities which leads to violence and civil conflict. This claim has been argued to overpredict grievance and civil war (Carey 2009).

Many scholars agree that inequality has a role in inducing political violence or civil war risk, but they do not agree on which kinds of inequality induce risks and in what degree. Moving first to vertical inequality, previous studies are mixed (Muller and Seligson, 1987; Boix, 2008). Studies concerning vertical inequality and repression, are few, but for civil war there are many. For studies of vertical inequality and repression, Landman and Larizza (2007) examined the link between vertical inequality and repression, using Iberian colonization as an instrument, where they found a statistical link between income inequality and repression. Svulik (2012) and Haggard and Kauffmann (2016) examined this link indirectly by looking at concepts related to repression, like democracy or military intervention. Svulik (2012) looked at repression in relation to military intervention in government, meaning military either intervene in government affairs or overthrow their leader. Using an econometric regression, Svulik

(2012) finds a significant link between the level of vertical inequality and military intervention, where military intervention is argued to be a result of the level of inequality. This finding is curvilinear, meaning that the likelihood of military intervention or military coup is higher when the level of inequality is in the middle range. Svobik argues that the more inequality, the more likely the political leader is to use a repressive strategy, which again requires the political leader to grant more resources and new jurisdictions, which increases the incentives for the military to intervene in government affairs. Inequality then tends to affect repression, because countries that experience a coup, also tend to become more repressive afterwards.

Svobik (2012) argue that the reason that the military is empowered in high inequality situations is to repress dissent violently. This again indicates that there is an interaction between inequality and repression.

In the civil war literature on the other hand, some of the earliest studies finds a significant relationship between the vertical income inequality measure, the Gini coefficient, and political instability. Muller and Seligson (1987) for instance, found a significant link between vertical inequality and political instability, with cross-sectional data. Later research has been more mixed, and many studies do not find a statistically significant link between vertical inequality and political violence (Fearon and Laitin, 2003). This has led some scholars to believe that although inequality might induce grievance, it does not necessarily create opportunities for civil war (Fearon and Laitin, 2003; Collier and Hoeffler, 2003; Laitin, 2007). This also matters for the relationship between inequality and repression, since repression is often seen as a reaction to political dissent (Poe et.al 1994, Rørbæk og Knudsen, 2017) In later research, scholars have argued that inequality may lead to political violence, but that it is horizontal inequality and not vertical inequality that leads to political violence (Østby, 2008, Cederman et.al, 2011; Buhaug et.al, 2014). A concern related to this paper is that some may argue that horizontal inequality in itself is a form of repression which then may make a problematic estimate for repression. Inspired by Rørbæk and Knudsen (2017), I argue that although ethnic exclusion from power may be seen as a form of repression, it can be naturally distinguished from physical integrity rights violations. Political leaders to not exclude ethnic groups from access to political power as a form of direct violent repression, but that they use violently repression when the excluded group demands change, and the ruling group wants to maintain status quo (Rørbæk and Knudsen, 2017). Cederman et.al (2011) argue that ethnic excluded groups are

more likely to rebel and argue further that this is the reason why previous research on grievance-based mechanisms is inconclusive. They therefore argue that grievances are not induced between individuals but between ethnic groups, which may lead to civil conflict. In African and Middle Eastern countries, it is more common to examine the relative political or income gap between ethnic groups, horizontal inequality, than vertical inequality since it is this type of inequality that is more visible. Some studies show that horizontal inequality is more likely to be significantly related to political violence, rather than inequality among people (Miguel, 2004; Alesina and Ferrara, 2005; Esteban and Ray, 2008). Recent civil wars have been fought by ethnic or communal groups, for example (Collier, 2010). Houle (2015) has examined this further and found that horizontal inequality only has a destabilizing effect when the inequality level within an ethnic group is low. As the within group inequality increased, the less likely is horizontal inequality to cause political violence. Therefore, he concludes that at least when researching horizontal income inequality, you need to account for within inequality.

In later research the grievance-based perspective has been criticized by various scholars. In relation to inequality and protests, Solt (2015), finds that more inequality leads to less participation, which is the opposite of what grievance theories propose. He therefore proposes that a better theory to apply in relation to the link between inequality and protest, is the relative power theory, which proposes that more inequality means more political resources for the rich elite relative to the poor. This makes it easier for the elite to put forward their own political agenda, and demobilize the poorer population from participating. This again results in more political inequality. Solt (2015, p. 1325) concludes that more inequality “does not enhance an individual’s sense of relative deprivation in ways that make them more likely to engage in protest, nor does it make richer individuals more likely to protest by providing them with more of the resources needed to do so”. Although this may explain the level of repression, it makes it harder to see repression as a result of grievance-based dissent.

Others have criticized the grievance-based theory of not being realistic, since it does not capture peoples’ real perspectives. First, grievance-based theories assume that people are calculating actors with access to information on inequality. Recent research has shown this not the case. Gimpelson and Tresiman (2017) found with cross-national surveys that most people don’t know how the distribution of income and wealth looks like in their country. Except for the elite, respondents guessed little better than chance, about their countries’ current status in

terms of inequality. Gimpelson and Treisman (2017) argue, therefore, that if grievance theory is related to inequality, it is related to perceived inequality and not real inequality. The second criticism of grievance-based theories is the assumption that people want a more equal distribution of wealth and income. Hirschman and Rotchild (1973) argue that this view is not entirely correct since it depends on how well the society is doing as a whole. If the economy is going well, and if one experiences a friend or relative that experience an improvement in their economy, people will be happy because they expect that they will experience an improvement soon. Therefore, the factor of perceived social mobility is important if people feel grievances based on inequality or not. This view has been supported by Starmans, Sheskin and Bloom (2017), who find that people are less in favor of equal distribution of wealth, and more in favor of fairness in the distribution. As, Hirschman and Rotchild (1973) argue, the perception of inequality lies in how institutions create inequality. People do not feel frustration because they experience relative deprivation, but because they are afraid they might experience absolute deprivation in the future.

The problem with these critiques is that they focus in general on inequality in terms of income and wealth, but do not focus that much on inequality in terms of power distribution, access to public services or civil liberties, which might be easier for people to detect compared to income inequality.

To sum up, the grievance-based mechanism proposes that inequality causes grievance-based dissent. This dissent may result in protests, conflict and civil war. This creates uncertainties for regime which again makes them choose repression the main strategy to stay in power. As mentioned, the critics point to some relevant problems with grievance based theories, and point either directly or indirectly that the role of institutions as important in how inequality may affect political violence or repression. Therefore, in the next section I will explore the institutional mechanism linking inequality and repression.

*Causal diagram one: Grievance mechanism*



### 2.4.2 The institutional mechanisms

Although dissent and grievance may explain the link between inequality and repression, some have argued that we also need to look at other ways that inequality may affect repression. Some scholars have argued, for instance, that economic inequality may affect political inequality which in turn may affect other aspects of how the regime behaves, where one of the aspects is the level of repression (Engermann and Sokoloff 2002, Acemoglu and Robinson 2006, Whucerpennig et.al 2016). The link between institutionally-based inequality and repression has been mostly developed by Acemoglu and Robinson (2006, 2008). Acemoglu and Robinson (2006) argue that repression is a strategy used as a trade-off between democratization and preserving the current regime system. The more inequality, the more likely the people are to demand change in institutions and transition to democracy. This mechanism lies in the transitory nature of political power: " The citizens are presumed to have political power today, but uncertain about whether they have similar power tomorrow" (Acemoglu and .... 2006, p24). What this means is that in an authoritarian regime there is no balance between the elite and the people, where the elite is argued to be either the rich one percent or a leading ethnic group (Acemoglu and Robinson, 2006). The unbalance leads to an unequal distribution in both power and economic assets. On account of this, the people might want to change the current institutional system to a democracy. A democracy means more stability in their *de jure power*, meaning power protected by law. To make these changes, they use their *de facto power* and decide to rise up. A successful uprising might mean a transition to democracy and a fairer distribution of assets. In the other scenario when inequality is not high, but high enough for the people to protest, a successful uprising means concession of redistribution. In this scenario, concessions might be enough to silent dissent, since a large proportion of the people lack incentives to rebel. If the level of inequality is high, people are more likely to overcome the collective action problem of protests and revolt, and co-optation won't work. In this scenario the people are dissatisfied with the status quo, and the group of people is too big that it is hard to redistribute without resulting in a big economic loss for the ruling elite. Therefore, the people will demand changes in their *de jure power*. When the level of inequality is high, cost of democratization is too high for the elite, because a fair distribution will mean a big loss for the elite in power and assets. Therefore, the regime decides to repress, and the regime stays the same. The third option is when inequality is in the middle range. Here, the opportunity cost for the people is great enough to overcome the problem of collective action, and the number of assets for the elite is not so great that it is worth protecting. In this scenario the

regime is more likely to democratize rather than repress. The key point here is that inequality sustains repression, because the higher the inequality, the more costly is a democracy for the elites that govern the state.

Svolik (2012) has built a theory on a similar claim concerning inequality and the likelihood of a military coup. In this view, like in the theory of Acemoglu and Robinson (2006), the level of inequality determines if the people will revolt or not. As discussed in the section above, the dictator wants to avoid using a high level of repression, because repression means that the dictator must bargain with the military for the use of their resources and loyalty. The more repression the dictator decides to use, the more likely is the regime to experience military intervention. Since the level of inequality decides if the people are likely to rebel, the level of inequality also affects the decision of whether to repress or co-opt the people. The higher the level of inequality the less likely is the dictator able to co-opt the people to stop the revolt, and therefore the dictator has to repress.

Like Acemoglu and Robinson (2006), Svolik (2012) argues that regime change is more likely to happen when the level of inequality is in the middle range. The difference between the two is that in Svolik' (2012) case, regime change implies a transition from dictatorship to military rule. For Acemoglu and Robinson (2006) a dictatorship is more likely to experience a transition to democracy when inequality is in this range. Another difference is that Acemoglu and Robinson (2006) claim that the ruling elite is more likely to lose power if they do not repress, while Svolik (2012) claims the opposite, that repression heightens the risk of losing power. Therefore, the theoretical views of Acemoglu and Robinson (2006) and Svolik (2013) are in some way inconsistent in explaining the mechanism of inequality-repression. Still, they both agree that repression may increase with the growth of inequality, which again is related to the role of institutions.

Inspired by the theoretical view of Acemoglu and Robinson (2006), Haggard and Kauffmann (2016) examine their theory and look at repression indirectly by analyzing the link between inequality and democratization. They write

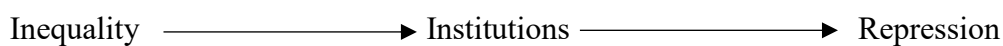
"in unequal authoritarian regimes, elites have strong incentives to repress political challenges that would also have redistributive effects. In unequal democracies, economic elites pose an ongoing risk, as they have the power to undermine democratic rule or overthrow it all together," (Kauffman and Haggard 2016, p12).



Here they link democracy and repression as one entity, implicitly connecting inequality to the level of repression. They find no significant link either between inequality and democratization or between inequality and reversion from democracy to autocracy. Therefore, an implication we can draw from this is that inequality is not related to repression. They instead argue that democratization is related to the repressiveness of the regime, weak institutions and fiscal capacity (Haggard and Kauffmann 2016). Based on the findings of Svobik (2012) and Haggard and Kauffmann (2016), the results concerning inequality and repression are mixed, and few examine the problem endogeneity in terms of inequality and repression, which is that it is a possibility that inequality may be a result of repression. The institutional mechanism then raises the possibility of reversed causality, which I need to account for.

To sum up, the institutional mechanism proposes that inequality is structural and result of a country's institutions. The institutions sustain the level of inequality which again affects how state actors behave. In a structurally unequal society, the people want fairer institutions, but state actors want to keep the status quo, since a change will mean less resources for the elite. Therefore, the elite decides to repress. In that way structural inequality affects the level of repression.

*Causal diagram 2: Institutional mechanism*



The main differences between the institutional mechanism and the grievance-based mechanism is that grievance theory explain the mechanisms of the people and why they might rebel. Repression here is then the immediate response to an absolute threat. The institutional mechanism on the other hand, explains the role of the institutions and how this explains the behavior of the elite. Here repression is incentivized to detour a latent threat rather than an absolute threat. This threat can be from the people, but as Svobik (2012), this threat is more likely to come from the elite and the military. The elite here can both be the rich and the ruling ethnic group. Based on the two mechanisms linking inequality to repression I formulate two hypotheses

H1: Vertical inequalities lead to a higher level of state repression

H2: Horizontal inequalities lead to a higher level of state repression.

Further in the paper I explain how I am going to test these hypotheses. The literature so far has only looked at how today's level of inequality and institutions may affect the level of repression, still much of the literature concerning the institutional mechanism of inequality and political violence does not consider where the institutions came from and how countries became unequal. The literature has also not looked at what type of inequality that might affect repression. Therefore, I will examine this further in the next section where I present the main variables and the challenge of endogeneity in terms of reversed causality and omitted variable bias. I address these concerns both theoretically and empirically by using an instrumental variable.

### **3.0 Method and research design**

This section explores in more detail the method and variables used in this study. First, I present my dependent and independent variables in terms of repression and inequality. I further discuss the problem of endogeneity in studies of inequality and repression. Second, I introduce the instrument used in this analysis, discussing other possible instruments as well. Further, I introduce the control variables. Following this, I explain the statistical modeling of inequality and repression, the method of estimating a Granger causality test, and the Instrumental variable-regression method. Although previous studies have, in some degree, managed to isolate the effect of inequality and civil war with instrumental variable analysis, very few studies have done this in regard to inequality and repression. The data used in this article contains 158 countries with a time period 1990 to 2015. My data set from year 1990, since it is post-cold war.

#### **3.1.1. Operationalization of the main variables**

#### **3.1.2 How to operationalize repression.**

I start by defining state repression in terms of personal integrity abuse. Defining and capturing violations of human rights can be a complicated matter. Coding human rights violations is always a matter of subjective evaluation, especially when comparing human rights abuse across countries (Poe et.al,1999; Poe et.al,2001). Still, most scholars agree that it is possible to rec-

ognize some common aspects in relation to human rights. Most human rights measures available are based on yearly human rights reports from Amnesty and US state department (Poe et.al 1999, Hafner and Burton, 2005; Landman and Carvalho,2010). This paper uses the Political terror scale as one of the measures of repression, which measures incidences of political imprisonment, execution, disappearances, and torture. This is defined as physical integrity rights abuse (Poe et.al,1999; Poe et.al,2001; Landman and Carvalho,2010, Faris 2014). The Political Terror scale goes from 1 to 5 and the categories coded are:

1. "Countries... under a secure rule of law, people are not imprisoned, for their views, and torture is rare or exceptional... political murders are extremely rare."
2. "There is a limited amount of imprisonment for nonviolent political activity. However, few persons are affected, torture and beating are exceptional... political murder is rare."
3. "There is extensive political imprisonment or a recent history of such imprisonment. Execution or other political murderers and brutality may be common. Unlimited detention, with or without a trial, for political views are accepted."
4. "The practices of (level 3) are expanded to larger numbers. Murders, disappearances are a common part of life.... In spite of its generality, on this level terror affects primarily those who interest themselves in politics or ideas."
5. "The terrors of (Level 4) have expanded to the whole population.... With which they pursue personal or ideological goals," (Gastil, 1980, as quoted in Stohl and Carleton, 1985).

The PTS captures human rights practices across 180 countries from 1976 to 2017 (Landman and Carvalho,2010). The PTS is generally considered a valid and reliable measure (Poe, Rost, Caray,2006; Landman and Carvalho,2010). On the other hand, like most measures made in political science, PTS has its shortcomings. One critique is that five values are not sufficient to measure repression. Another critique is that the PTS treats repression as a unidimensional measure (McCormick and Mitchell,1997). They claim that political imprisonment and torture should be measured in a separate variable and political killings in another. In some settings, dividing types of repression can be useful. If there is a theoretical claim that inequality is related to particular types of repression, this distinction might be important. Poe et.al (1999) argue that this distinction is not important since one strategy of repression affects another strategy. If you kill an opponent, there is no need to imprison the opponent. Different strategies depend on how big the threat is, and who makes the threat. It may also be affected by how the people perceive this strategy (Acemoglu and Robinson 2003, Svoblik 2012) This paper does not take any standpoint on what type of repression is related to inequality but recognizes that different levels of types of inequality may be related to different forms of repression. To accommodate these concerns, I also use the Physical integrity rights index (PIR), developed by Varieties of Democracy (V-Dem). It focuses mainly on one-sided violence, and

for that reason, although correlated with the PTS, focuses on physical integrity as the "freedom from political killings and torture by government" (Skaaning,2016). In addition, the PIR-index appears to exclude the category of imprisonment and disappearances from their measure, and the PTS data are gathered by organizations like Amnesty International, Human rights watch and the US state department, while the information from V-Dem is gathered by experts (Landman and Carvalho,2010; Skaaning,2016).

Going further in the discussion of how to operationalize state repression, a study by Fariss (2014) has pointed out that since most human rights databases base their quantifications on human rights reports from Amnesty and US state departments, they are biased, leading many to believe that the overall level of repression of the world has not changed, when it in fact has declined. Although the measures are valid in detecting human rights violations, they are not well suited to look at human rights changes over time. Fariss (2014) argues that this is a result of different factors. One is the changing standard of accountability in how organizations monitor physical integrity rights violations. He argues that this changes because of two things "(1) government authorities have an incentive to hide the use of these policy tools, and (2) observers and activists use countervailing strategies in order to reveal, and ultimately change repressive strategies for the better. This interaction between state actors and observers, both academic and activist, affects the production of information used by researchers to quantify repressive behaviors," (Faris 2014, p287)

In other words, human rights organizations have become more capable of observing repressive practices over time. Based on this issue, Fariss (2014) has developed a measure based on what he called the dynamic standard model, compared to the other measures of repression which he classifies as the constant standard model. Based on statistical analysis he makes a measure that in a better degree detects change and improvement in human rights practices over time. He tests the human rights measure to see if human rights practices have improved after signing the UN convention against torture. He finds that the signing of the UN Convention has positively improved human rights practices. Therefore, I do a third analysis, where I run the regression models with the newly developed measure by Fariss (2014). A new study by Pevehouse and Vabulas (2019) also found evidence that countries use foreign lobbying to create more favorable human rights ratings. This is done because human rights rating is believed to be related to the amount of foreign aid a country gets and accessibility to trade deals.

The Fariss (2014) approach to measuring human rights is then also more likely to combat these types of problems, since the measure accounts for the changing standard of accountability over time when reporting human rights abuse.

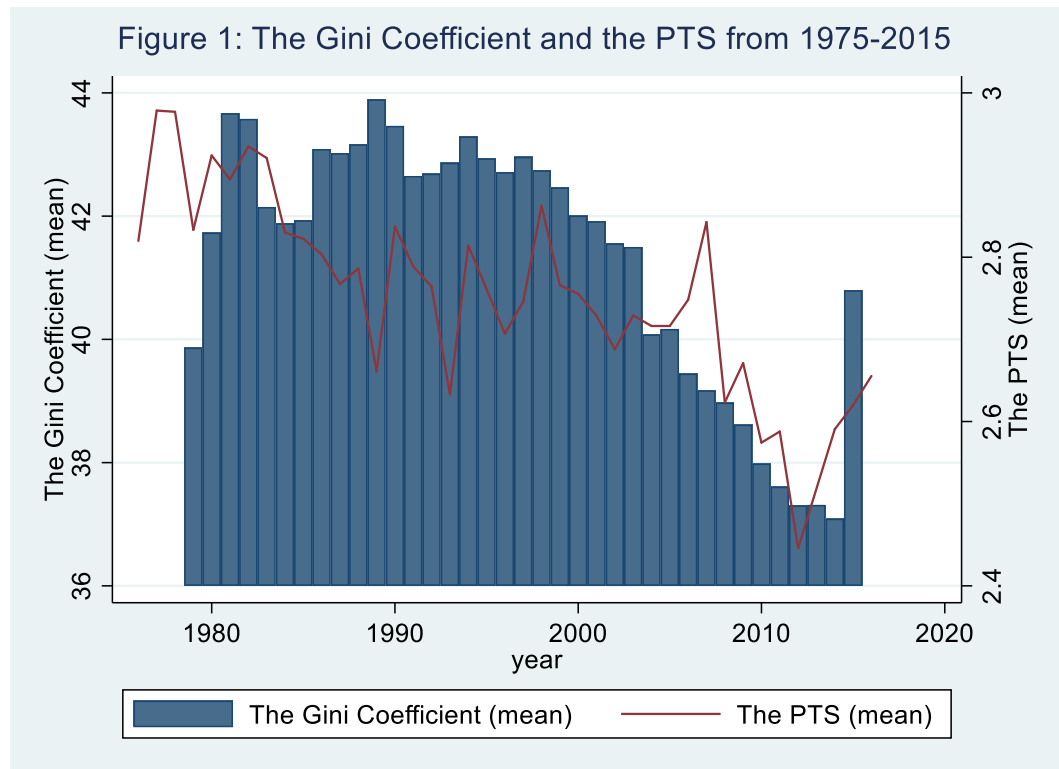
Looking at two of the main variables of this paper, I compare how their levels differ in regard to the different coding instruments, they use. For instance, looking at Brazil in 2015, the PTS score is equal to a 4, which is almost the highest level of political terror. This score is different from the one in the physical integrity rights index that show for Brazil a level of 0,71 out of one, where a one means that physical integrity rights are highly respected. This variable then gives an impression of a lower level of repression compared to the PTS measure. In the opposite direction, Bhutan has repression level of 1, if one uses the measure of the PTS based on data from the US State Department. In this case, the physical integrity rights index has a level of 0,77, not far from the level of Brazil. There are also countries where the PTS index and PIR index agree on the level of repression. For example, DRC Congo has a PTS-level of 5, and PIR-score of 0.213. The difference in the two measures is evident in the case that more countries come under the category as highly repressive in the PTS-measure compared to the PIR-measure, still, this difference might be because the PTS uses more criteria to capture political terror than just political violence, compared to PIR that only looks at political violence. This suggests that they capture in some degree different things or at least the PTS captures a broader conceptualization of repression. This also means that the comparability of these two variables has to be looked at with some caution. The different focus of these variables may give different results in the regression analysis. However, this difference captures the importance of using both measures because it provides the opportunity to consider the robustness of my findings to varying definitions of repression.

Looking at the overall difference between the PTS and PIR, they seem to agree when it comes to the level of repression in Asia, Africa, and the Middle East, but seem to diverge when it comes to Europe and Latin America. A reason for this may be related to the fact that countries in the Sub-Saharan Africa have bigger problems with violent conflict than countries in other parts of the world, thereby heightening the incentives for the regime to use direct physical violence on its population compared to the countries in Latin America. In a more peaceful country, direct physical violence might be less justified to use against the opposition, which means that other repressive strategies need to be used.

To sum up, I use three measures of Political terror as the dependent variable. The first one is the Political Terror Scale (PTS) which uses coding based on information from Amnesty International and the US State department. The variable is coded ordinally and ranges from 1 to 5, where 1 is a low level of political terror and 5 is a high level of political terror. The second variable is the Physical integrity right-index (PIR) that measures in what degree physical integrity rights are respected. It goes from 0 to 1, where 0 means the rights are not respected and 1 means the rights are highly respected. This variable is ordinal but can be treated as a continuous variable (Ringdal 2018, Mehmetoglu and Jakobsen 2017). This allows me to use this variable in an OLS. The third variable is the latent mean of human rights protection scores repression variable developed by Fariss (2014). The variable is developed to combat some coding bias that earlier human rights indices have been criticized for (Fariss 2014)

### **3.1.3. How to operationalize inequality**

The first main independent variable is the Gini-coefficient which measures vertical inequality. The variable is originally measured in quintiles and make it continuous the variable has been interpolated. This paper uses the Gini coefficient because it is one of the most used measures of inequality (Buhaug et.al,2014; Svolik,2012). It is also used in conflict studies and is therefore also relevant in relation to repression (Easterly,2007). Therefore, to make this study more consistent with previous research the Gini is a useful measure. The variable measures the distribution of income, where a low score means little inequality in income distribution, and a high score means high inequality income inequality.

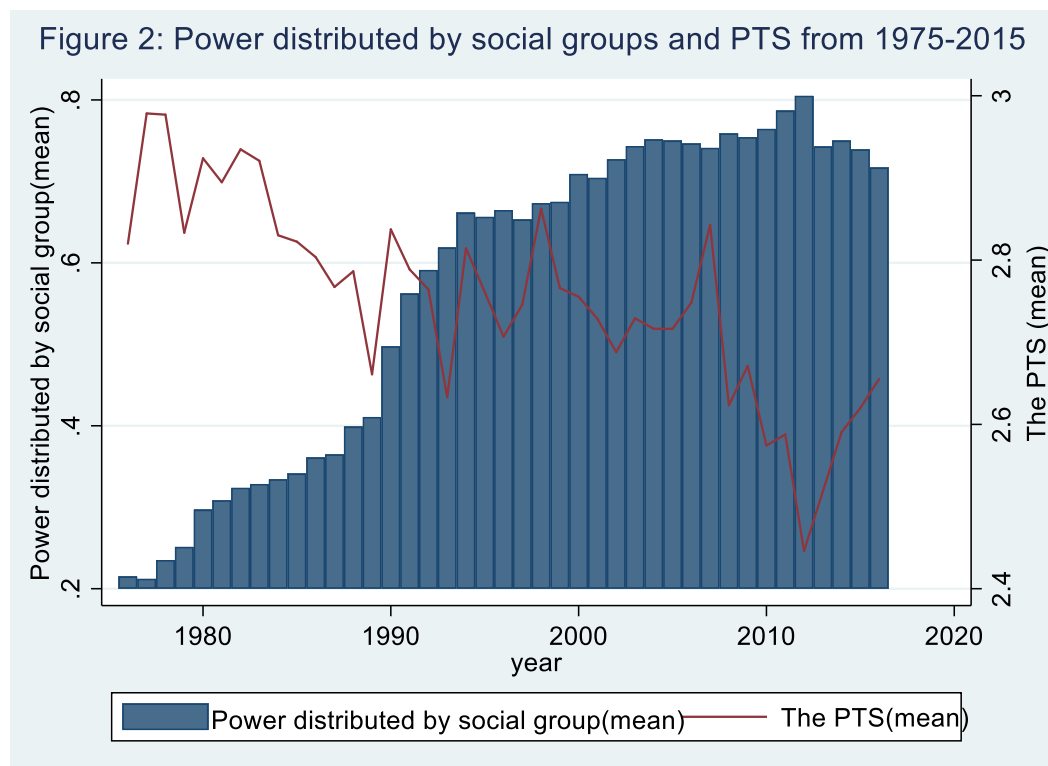


The figure displays the trend between the Gini coefficient and the PTS-scale in the period 1980-2015. The relationship is not perfect, but as the Gini Coefficient has declined, the level of repression has decreased steadily after the cold war, with an increase after 2011.

Further, I use two measures of horizontal inequality. Both are based on data from the Ethnic Power Relations (EPR) data, but the measures are developed by Buhaug et.al (2014). The first measure looks at ethnic groups excluded from power, and the second measure looks at the largest discriminated group excluded from power. Both measures range from 0 to 1 and can be treated as a continuous variable. Both variables are also highly skewed, so to get better measures, both variables have been log transformed. All units with the value 0 have been recoded into a small number of 0,0001 so they do not drop from the analysis. This is not ideal, but I consider it as the better method to both accommodate the skewness and to keep enough data points to run the analysis<sup>3</sup>.

<sup>3</sup> There are problems to consider, when logging this variable. Since large share of the observations are zeros adding a small number while logging might give misleading results because it might give many big negative values. Skog (2004) have also discussed to problems of logging variables that are ordinal, and that one should steer away from this type of recoding if possible. Because of the skewness, I have still decided to log both exclusion of discriminated groups and size of largest discriminated group. Still I have done the analyses with the non-logged version of the variables, and the results were identical. Results can be shown on request.

Further, I use two variables from V-Dem that measure political equality. The first variable measures equality in terms of power distributed by social group, which is a proxy for political horizontal equality. The second variable measures equality in terms of power distributed by social class which works as a proxy for political vertical inequality. I use these two measures to assess the robustness of the results to different independent variables. The main difference between the horizontal measure from V-Dem and the two measures from Buhaug et al (2014), is that the variables from Buhaug et.al (2014) only capture groups that are considered politically relevant , compared to the V-Dem measure that captures all social groups, and not just the discriminated ones. The V-Dem measures also contain more data points. The equality measures from V-Dem range from -4 to 4 where -4 means there is little to no equality in terms of the distribution of power, and 4 shows high equality in terms of the distribution of power among the groups. (Gerring,2016). There have not been any further alterations of the two variables.



The figure displays the trend with equality in power distribution among social groups and the level of the PTS-scale in the period 1980 to 2015. Compared to the trend with the Gini coefficient, the relationship is harder to detect. The equality level of power distribution has been



fairly stable over time after the cold war, while the level of repression has decreased. Nevertheless, the trend is that level of repression is decreasing as the level of equality increases, which may indicate that this link may be important.

### 3.2 Challenge of endogeneity

This section explains the challenge of endogeneity, which is when the explanatory variables are correlated with the error term, leading to biased and misleading results. Although the relationship between inequality and state repression may appear positive, and robust, there are two issues to consider. One of the endogeneity concerns is reversed causality, meaning that any relationship we find between the independent variable (X) and the dependent variable (Y), actually goes in the other direction. A second possible source of endogeneity is the problem of confounding factors, meaning that a relationship between the independent variable (X) and the dependent variable, is actually caused by a third variable (Z) omitted from the model (Morgan and Winship 2007, Angrist and Pischke 2009, Kellstedt and Whitten 2013).

- 1) *The problem of reversed causality.* One scenario is that the government represses as a tool to sustain the level inequality. If the level of inequality is high, the regime would want to repress, rather than co-opt the people. Svoboda (2012) argues that if inequality is high, redistribution to the majority will not enhance the likelihood of a regime to stay in power. The most strategic plan for the regime is to co-opt with the elite that is already in power since it is the elite who have the resources and power to overthrow the leader in a potential coup d'état. As a result, the elite gets the highest salaries and the best access to public services. This is the best strategic move since redistribution would mean fewer resources to the elite, and a greater chance of being overthrown. In the long run, this may increase inequality, since repression might affect wage growth for the working class. Therefore, the level of inequality we observe at a time (t) is actually the product of repression in the past. The other scenario is that the government does not repress the protesting group. This scenario concerns countries with low inequality. In countries with lower levels of inequality, co-optation is often more attractive than repression. Therefore, low levels of inequality today are based on past decisions of not to repress, which lead to further redistribution. The explanation here is that countries with already low inequality never needed to repress in the first place. Acemoglu and Robinson (2006) argue that a regime is more likely to redistribute than repress if the

inequality is already low since a redistribution doesn't mean a big loss in resources for the elite.

The scenario discussed above shows the importance of examining the issue of reversed causality. Reversed causality may lead us to the wrong conclusion, in this case that inequality affects repression when it is repression that causes inequality. This may cause us to suggest the wrong medicine for a problem. A common analogy can be used to explain reversed causality in order to highlight the problem. When examining the link between lifelong smoking and the risk of dying of lung cancer, one will first see that a bigger share of ex-smokers is more likely to die of lung cancer than current smokers. A naïve conclusion may be that people who quit smoking are at greater risk of dying from lung cancer, compared to lifelong smokers who don't quit. Looking at this in more detail we find out that it was the medical diagnosis of lung cancer that was the reason for people to quit in the first place. Considering this knowledge, we see that the right medicine for people diagnosed with lung cancer is to quit smoking since it reduces the risk of dying rather than increases it. This analogy is transferrable to the issue of inequality and repression. If repression is, in fact, the cause for the level of inequality, we should focus on reductions in repression. If repression is a result of inequality, policymakers should concern themselves with inequality reduction. Therefore, combating the issue of causality is important and necessary.

- 2) *Unobserved confounders*. A significant relationship between inequality and repression may be related to the omitted variable bias, in the sense that an important variable is omitted from the regression equation. The level of inequality might be correlated with unobserved confounders that cause levels of inequality and human rights violations. Factors that have been proposed are, for example fiscal capacity, economic growth, history of military coups and the history of civil wars in the country.

An analogy discussed by Winship (2007) to explain causal mechanisms helps illustrate the problem. In economic theory there is often an agreement that education causes higher labor market earnings. Still, most economists think that higher labor market earnings are also related to mental ability. Mental ability is also strongly correlated with higher education, thereby making it difficult to see if it is a mental ability or education that causes higher labor market earnings. If education does enhance a person's productivity-skills, it is also important

to know in what degree this is caused by education. This again stresses the importance of formulating a counterfactual model. If repression and inequality are not related to each other, or if repression and inequality are in fact actually a result of unobserved factors, neither the focus on repression nor inequality will bring a good solution. If repression and inequality, for example, are affected by civil war history, the policy implications should be peacekeeping and diplomacy to combat these issues and not inequality reduction per se.

I explore the issue of reversed causality on a theoretical and an empirical level. I start with a theoretical discussion on how historical structures from the past may affect today's level of inequality, which lead me to think that some of the variances we see today are caused by factors that have their roots in deep historical past and that are not related to levels of repression. Then I also address this by using an IV where I will discuss the theoretical and empirical solutions to. This instrument should also not be correlated with any omitted variable. This instrument will be explained further in the next section, but in brief, I test the relationship between inequality and repression, using the instruments wheat sugarcane and artificial borders. A second aspect to consider is omitted variables that affect inequality and repression. This issue will be raised later in the method section on page 39 to 43 and in the sensitivity analyses on page 61 to 71.

### 3.2.1. Origins of inequality

This section explains the theoretical reasons for why inequality is more likely to be a result of historical structures, rather than a consequence of the repressiveness of the regime. Scholars do not agree on the link between inequality and political violence. Some argue that protest civil war and repression may cause inequality (Reagan and Norton, 2005; Rørbæk, 2016). Still newer literature gives explanations of how inequality can create more authoritarian and repressive regimes (Acemoglu and Robinson 2012). These scholars claim that inequality can be explained by two sources: 1) historical development in institutions and 2) a population characterized by a more ethnic-based rather than national based identity (Miguel, 2004; Easterly, 2006; Whucherpennig, Hunziker and Cederman, 2016). The first case distinguishes between structurally based inequality and market-based inequality. Structural based inequality is inequality that is related to a historical period or event. Example of states that are structurally unequal include South Africa, Argentina, and Brazil (Easterly 2006, Acemoglu and Robinson 2006). This can be vertical or horizontal structural inequality. This kind of inequality is linked

to weaker institutions, bad fiscal capacity, and underdevelopment of the state (Engermann and Skoloff 2002, Easterly 2006). Market-based inequality, on the other hand, is related to globalization and international trade. Easterly (2006) argue that one example of a country that experience market-based inequality is China, where the level of inequality has increased as a result of international trade and rapid growth.

Engermann and Sokoloff (2002) examine structural inequality in relation to the colonial period, and the link between the distribution of arable land and imported slave labor. Engermann and Sokoloff (2002, p. 45) state that colonies:

“in the Caribbean or Brazil, enjoyed a climate and soil conditions that were extremely well suited for growing crops, such as sugar, that were highly valued on world markets and most efficiently produced on large slave plantations. Their population came to be dominated by large numbers of slaves obtained through the international slave market, and they quickly generated a vastly unequal distribution of wealth, human capital, and political power”

Sugar plantations are then seen sources of the high inequalities we find in many of the Latin American countries. In sharp contrast, the climatic conditions in North America were more favorable to other crops like wheat. These areas also had few indigenous people that were used for forced labor, compared to South America, and were therefore not as attractive for Europeans at the start of their colonization. These areas are therefore more associated with the emergence of family farms rather than plantation economies and the slave trade and lead to more equal and homogenous states. One exception here is the American south which for a long period were considered to be more unequal than the American North (Nunn (2007). The emergence of family farms allowed the growth of a wealthy middle class which again worked against unequal practices. Engermann and Sokoloff (2002, p. 45) explain that this is an important contribution to the research on inequality because it concerns "the possibility that the extreme differences in the extent of inequality that arose early in the history of the new world economies may have contributed to systematic differences in the ways institutions evolved". The institutions that evolved are likely to be less democratic and less equal in terms of opportunities. The institutions were also designed to favor the elite. These institutions developed through different types of extractions, from sugar and cotton plantations to mining of various minerals as gold and silver. This leads to a practice where the slaveholders enriched themselves instead of the inhabitants and created economic inequality. The economic inequality

leads to bad and unfair institutions which again sustained economic inequality. This again created political inequalities and less democratic regimes. These types of institutions are then related to sustained inequality, and it is this I define as structural based inequality. Compared to market-based inequality, structural based inequality is fairly consistent over time, which again allows us to argue that some forms of inequality are a product of history rather than a result of today's political leadership.

Easterly (2006) found evidence for the claim that inequality has its origin in the colonial period, where he developed an instrumental variable to predict vertical income inequality. He used the wheat to sugar-cane ratio as a proxy for labor intensive plantation economies and imported slave labor during the colonial period. He found a tendency that countries with a higher ratio of arable land suited for sugarcane plantations were more likely to have a higher level of vertical inequality today than countries that had arable land suited for wheat. The same study also showed a strong association between this type of vertical inequality and worse institutions (Easterly 2006). He also found this again to affect the countries institutions and economic development. Nunn (2007) found similar results by looking at New World economies and the US through de-facto importation of slave labor - slave labor had a significant effect on determining the level of economic inequality. Nunn's (2007) slave importation measure did not just predict inequality through Labor intensive plantation-based economies, but also by other colonial activities such as mining and other types of extraction. Nunn (2007, p. 34) argues that slavery had two effects "first, slavery resulted in lower long-term economic growth, and second, slavery resulted in greater initial inequality, which has persisted until today". Although the study of Easterly (2006) and Nunn (2007) differ in the explanation of slavery and underdevelopment, they both find evidence that importation of slaves had a long-term effect on inequality.

Acemoglu and Robinson (2006) have a similar approach, arguing that these historical structures lay the foundation for institutions where the rich will suppress democratization to avoid redistributive policies for the population. In a highly unequal society based on land assets, the elite has too much to lose and will block policy changes that will lead to more equality and enforce compliance with repression. This kind of inequality is also linked to general political instability which lowers the rate of economic growth. This also heightens the use of one-sided violence by the state, which again sustains the level of inequality (Easterly 2006 Acemoglu

and Robinson 2006, 2013, Kauffman and Haggard 2016). One main difference between Acemoglu and Robinson (2012) approach and Engermann and Sokoloff's (2002) approach, is that Acemoglu and Robinson claim that inequality has its roots in political unequal institutions and not economic unequal institutions, as Engermann and Sokoloff (2002) claim. Acemoglu and Robinson (2012) further explain how these institutions appear. The big institutional changes happen when the old institutions interact with critical junctures. Critical junctures are major political events like industrialization, the opening of international trade and the discovery of the Americas. These were great critical junctures for the west that allowed for economic growth and the emergence of more state centralization and less extractive institutions. The black death, another critical juncture, in European countries like Britain, made the feudal lords weak, which reduced a form of coerced labor, and allowed for entrepreneurship. This leads gradually to fairer institutions which again changed positively with the critical juncture of industrialization.

In Latin America, Africa and countries in Asia, institutions interacted with another critical juncture - colonization. Instead of leading to rapid growth, many colonial institutions were designed for forced labor and to enrich colonial powers instead of the people. When these countries became independent, they continued to use the same institutions as the ones developed by the colonial powers. According to Acemoglu and Robinson (2012), this explains the inequality patterns we see in Latin America today. The colonial powers also made their print in the African and Asian region but in other ways. Kongo, for example, was included in the Atlantic trade, but instead of creating more pluralism as in Europe, it strengthened the absolutist kingdom of Congo. The tribal chiefs captured people from their own population, usually people from wars, to sell as slaves to the Portuguese colonial power. This also led to institutions that favored the elite and allowed them to extract resources from the population without giving something back. In other African countries, similar changes happened, although some powers also became more decentralized (Acemoglu and Robinson 2013). The institutional changes depended on which type of interaction they had with the colonial powers. The interaction could be through the slave trade, slave plantations, or extraction of minerals, ores, and silver. Countries that were not known for great resources were not as heavily controlled as those who were known to have a great number of resources. One example is Botswana, which became a British protectorate instead of a colony. Diamond mines were not discovered until

after independence, which may be a reason for why they did not become a full colony. Acemoglu and Robinson (2012) explain that this also may be due to the old institutions Botswana had, and how these interacted with the critical juncture of colonization. Botswana is today one of the most equal states in Africa in terms of institutions and is also one of the richest (Acemoglu and Robinson 2012)

The different paths of the west and the colonial states is related to what Acemoglu and Robinson (2012) call extractive and inclusive institutions. Extractive institutions favor the rich elite and leave little to the general population. They created a vicious circle which is "based on extractive political institutions creating extractive economic institutions, because economic wealth and power, buy political power" (Acemoglu and Robinson 2012, p357). Extractive institutions are associated with a political system where income and public goods are distributed among a powerful elite which creates a political environment that excludes either social or ethnic groups. This creates more inequality and less stable economic growth, which again creates more unstable states that are associated with more conflict, and therefore, a higher level of state repression (Acemoglu and Robinson, 2001, 2013). The changes in the opposite direction are called the virtuous circle and happen with the emergence of inclusive institutions. Political inclusive institutions create economic inclusive institutions which again amplifies the political inclusive institutions. The reason is that it allows for entrepreneurship among the general population and not just among. This allows other people to become more powerful and challenge the power of the elite (Acemoglu and Robinson 2012).

To sum up, the historical origins of inequality, the inequality level of today can, on the one hand, be explained by the emergence of inequality during the colonial times, which created unequal economic institutions, resulting in unfavorable political outcomes (Engermann and Sokoloff, 2002). Inequality can also be a consequence of political institutions sustaining unequal economic institutions (Acemoglu and Robinson 2012). What both arguments show is that structural inequality can be fairly persistent over time and is hard to change, showing that some forms of inequality are more likely to have historical origins rather than being caused by today's practice and leadership. This may reduce some endogeneity concerns. Where they both differ is that the claim of Engermann and Sokoloff (2002) is that inequality has a direct effect on today's institutions, while the claim of Acemoglu and Robinson (2012) is that the impact of inequality is circular effect, where inequality causes bad institutions, which causes

repression, which again causes higher level of inequality. This raises empirical challenges in estimating the impact that inequality has on repression.

A second body of research focuses on the historical origins of horizontal inequality. The issue of horizontal inequality is also linked to former colonial powers which affected the power-sharing mechanism in ethnically diverse countries. Studies link instability and conflict to the level of ethnic exclusion from power-sharing. In post-colonial states, ethnic groups tend to be more marginalized and discriminated against, compared to countries that were not colonized (Acemoglu and Robinson 2006, 2013). Acemoglu and Robinson (2013) argue that colonial powers imposed institutional structures which differed greatly from institutions in Europe. These institutions laid the foundation for both future political and economic development in these countries. Political structures affected the power-sharing mechanisms in the country. These structures determined which groups were to be included and which were to be excluded. Economic structures were affected in the sense that it both facilitated the elite to protect their assets, and because the political structures affected inter-group inequality in a negative way (Acemoglu and Robinson 2006, Whucerpennig et.al 2016).

Studies also show that the establishment of colonial institutions differed depending on which colonial power ruled the colony. The two biggest colonial powers, France and Britain, differ in the sense that the British preferred a form of indirect rule, but the French had a more direct involvement in their colonial assets. Not all historians agree that the distinction between British and French is entirely correct, and if there was a difference, it was not significant (Lange and Mahony 2006, Whucerpennig et.al 2016). Whucerpennig et al. (2016, p4) contend in their study that although both the British and French colonies used a combination of direct and indirect rule, the two colonies differ in the "frequency and especially the manner they implemented an indirect rule in practice". The British were more likely to preserve pre-colonial structures in and use them to their own advantage and "left local administration to native chiefs, kings, or other authorities with traditional claims to power, allowing them to rule largely autonomously as long as they cooperated with colonial officials" (Whucerpennig et.al 2016, p5). In contrast, the French colonies reorganized the local administration allowing for a more centralized planning and little local decision making. Instead of using local leaders, the French chose their own agents loyal to France. French colonial power also used people "without any traditional right to rule" (Whucerpennig et al. 2016).



Since the British focused on the already established tribal network, the structure allowed for political representatives from both in the central urban areas and in the periphery, after independence, to be included in the central government and to participate in political decisions (Whucerpennig et.al. 2016). This included a larger variety of ethnic groups included in power. In contrast, in the French colonies, there were fewer pre-colonial political structures that survived, making the political competition mainly concentrated in the urban center, where the colonial administration was concentrated. These structures further excluded ethnic groups in the periphery. Whucerpennig et.al (2016) studied this issue further using a cross-section, where they found statistically significant evidence that it was an interaction between british or french origin and inequality in terms of power-sharing. They also find significant relationship between this link and a higher risk of conflict. (Whucerpennig et al,2016).

In sum these perspectives concern both the amount of imported slave labor in relation to sugar cane plantations and how colonial heritage relates to modern institutional systems and inequality. The argument is that the level of inequality both politically and economically is a result of the colonial period and not fully due to today's political leadership. The importation of slave labor is likely to be both related to a countries' vertical and horizontal economic inequality. Also, the concern of whether a country as French or British colonial origin, is most likely related to horizontal political inequality in relation to power-sharing mechanisms, but this may have an indirect effect on inter-group economic inequality. This is likely to affect the power-sharing mechanisms, the strength of the institutions, and I argue also that this is likely to affect the level of repression today in a country, which is also the narrative put by Acemoglu and Robinson (2012) and Whucerpennig et al (2015).

### *3.2.2 The instrument*

Finding good instruments for inequality can be complicated. This section discusses the validity of the main instrument used in this article as well as discussing other possible instruments. Since I consider wheat sugarcane ratio to be most theoretically relevant in predicting inequality, I use a big part of this section to explain wheat sugarcane ratio and the conditions that have to be met for this to be a good instrument. I then explain in less detail the alternative instrument I use, which is a measure on artificial borders.

Inequality is a concept that has clear issues with endogeneity since inequality is in many ways a result of political choices. To find a good instrument for inequality, one has to be sure that the instrument only affects inequality and not in this case repression as well. Based on the works of Engermann and Sokoloff (2002) and Easterly (2006) the first instrument I use is wheat-sugarcane suitability. Wheat-sugarcane suitability is highly associated with the importation of slave labor, mainly in the sugarcane plantations. The instrument is also associated with labor intensive plantation-based economies, thereby being relevant to other parts of the world than just the Americas (Engermann and Sokoloff 2002). Both slave importation and labor-intensive plantation-based economies are also highly associated with a high level of vertical inequality (Easterly, 2006). The variable looks at the "exogenous suitability of land for wheat versus sugarcane" (Easterly, 2006, p757) as the logged percentage of land suitable for wheat and sugarcane and goes from minus one to one, where minus one is land is mostly suitable for sugarcane, and one is land mostly suitable for wheat. The variable can be argued to be a good instrument since the variable captures only the land that might be suitable for sugarcane- or wheat-production based on ecological zones in terms of soil, temperature and rainfall. Since it only measures crop suitability it does not show what is actually grown. This is a good way to make the instrument exogenous, since the actual production can be influenced by external factors, compared to the suitability to grow sugarcane. One factor could be economic growth and the states capacity to satisfy their peoples need, which I will look more at in the control variables section. With this instrument, Easterly (2006) have already shown that vertical inequality is likely to have negative effects on both economic growth and the quality of public institutions.

For wheat sugarcane ratio to be a valid instrument it has to meet the following conditions:

- 1) The wheat-sugarcane ratio must predict the level of inequality
- 2) Wheat-sugarcane ratio not is correlated with an omitted variable that also determines repression
- 3) Wheat-sugarcane does not cause repression directly
- 4) Wheat sugarcane does not cause repression through an omitted variable

The first condition is assessed statistically (see the results section below). The second condition is likely to be met since the wheat-sugarcane ratio is based on ecological zones with a

baseline from 1960 to 1990, and it is then unlikely that omitted variable that is also related to repression may affect wheat sugarcane suitability.

Condition three is more difficult, since wheat sugarcane also is associated with slave-importation in colonial states, and some may argue that slavery in itself was a repressive practice. Looking at the history of slave importation, this seems to be more related to today's level of inequality, than being related to today's level of repression. This means that today's repression levels are more likely to go through inequality, than the explanation that inequality goes through repression. For example, both the United States and Barbados were slave colonies but have a low level of repression. Barbados was actually one of the biggest sugar plantations in America, but Barbados has a low level of repression, high economic growth and a high ranking on the Human Development Index. Although Barbados has a high level of income inequality according to the Gini coefficient, the inequality indices in terms of power distribution and access to health benefits are far better than many of the Latin American and Caribbean countries that also had a high amount of sugarcane production. Therefore, plantation practices probably caused structural inequality and not structural repression. I also control for importation of slaves in the sensitivity analysis on page 61.

Another argument for why it is difficult to establish the link between importation of slaves and repression is that there are also countries in Latin America that did not experience a high proportion of imported slaves or had a labor-intensive plantation-based economy, but still became highly unequal and repressive. One example is Argentina, which had high levels of inequality and repression up to the 1980s. Engermann and Sokoloff (2002) explain that this was because Argentina was a Spanish colony which had strict immigration restrictions compared to countries under British rule, which affected their land policies by changing the proportion of land distributed among young men and making land concentrated among a few people compared to the United States. This according to Engermann and Sokoloff (2004) is an explanation of the modern level of inequality Argentina. This is also the case for Mexico. Although some may argue that Mexico is unequal today because of the extraction of gold and silver, Engermann and Sokoloff (2002) argue that this is more likely to be a result of the proportion of household heads per land, which was 2,4 household heads per land in Mexico. Engermann and Sokoloff (2002) argue that it is this factor that explains the level of economic inequality in

Mexico today, and not slave labor, which again is an example of a country with high inequality and high level of repression but that did not import slaves.

The cases of Barbados, Mexico and Argentina indicate that there are more complex factors at play than slave trade for why countries are repressive. Still, a common feature among the countries was that all countries were colonies. This may again indicate that it was the institutions that created today's level of inequality and not past levels of repression. To minimize the bias from any slavery-repression link, I will control for slave importation in the sensitivity analyses.

Moving to condition 4, I need to consider other factors that wheat sugarcane may be correlated with that may determine repression. One alternative is wheat sugarcane production can be linked to the transition to democracy since wheat- production was linked to a bigger share of family farms which again established wealthy middle class. A strong middle class is often considered to drive the transition to a democracy which also may affect the level of repression (Acemoglu and Robinson, 2006). This view has been challenged empirically where Kaufman and Haggard (2016) found no evidence between inequality and transition to democracy. They also found no link between inequality and reversion to autocracy. Acemoglu and Robinson (2012) discuss that repression is often a result of unequal political institutions which again creates unequal economic institutions which again leads to repression that sustains that intensifies and strengthens the unequal institutions. They argue that a stable democracy is likely to happen at the emergence of more equal institutions. Since democracy is more likely to come after a country becomes more equal, and since democracy is not likely to be the only reason for the level of repression, the more likely causal pathway is that wheat-sugarcane ratio predicts repression through inequality and not through regime type. Another alternative could be that wheat-sugarcane is related to civil war, which again predicts repression. Some argue that colonial states are more prone to civil war because the colonial period did not allow for the process of state centralization. This can be seen as the case in Peru and many African states (Acemoglu and Robinson 2012, Whucerpennig et.al 2016). Nonetheless, since I cannot theoretically justify this explanation, I also to block this pathway in the models (see section on control variables on page 39).

Another possible instrument that may explain inequality is the measure for Artificial borders. Alesina, Easterly and Matuzeski (2011, p. 1) define it as ‘artificial states’ because their political borders do not "coincide with a division of nationalities desired by the people on the ground“ I use the fractal index in measuring artificial borders. It compares countries’ borders to a square, and measures how close the borders are to a straight line. The more straight the line is, the more likely is the state to be artificial, which mean the smaller the fractal index. The squigglier the line is, the greater the fractal index is, and the less ‘artificial’ are the borders. According to Alesina et.al (2011) this measure is argued to be related to a country’s institutions and economic growth. It is also meant to predict ethnic fractionalization. A weakness with the instrument, is that it is not as theoretically strong in predicting inequality as the wheat-sugarcane ratio, which may also be shown in the post-estimation results. For further explanation of the measure one can see the full description in Alesina et.al (2011)

A reason why Artificial border might be a possible instrument is because these types of borders are related to ethnic fragmentation which according to Alesina et.al (2011) further explain the poverty level and underdevelopment we see in today’s Africa. . This creates problems concerning both trust and cooperation across ethnic lineages. This is again can be argue to be related to a countries’ economic performance. Although Alesina et.al (2011) do not look at this in terms of inequality, in a theoretical perspective artificial borders may have an effect on the level of inequality, most likely the level of horizontal inequality. This is because, Røbæk and Knutsen (2017) argue, that ethnic fractionalization is correlated with ethnic exclusion, and ethnically fragmented countries tend to be more horizontally unequal. Since Artificial borders are meant to predict ethnic fractionalization, it is then possible that Artificial borders also may be related to ethnic exclusion and therefore also might be a valid instrument that predicts horizontal inequality.

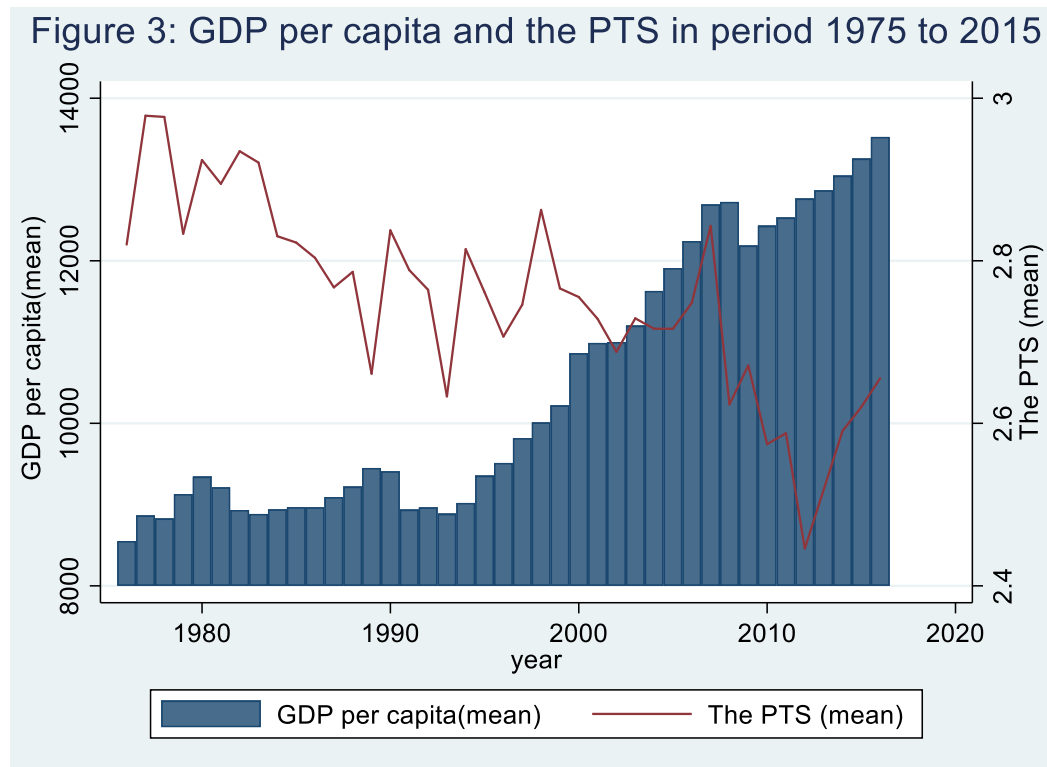
Therefore, artificial borders could in theory be an alternative instrument for testing whether inequality is more likely to lead to repression, rather than repression leading to inequality. This because a dictator cannot choose how their borders were drawn in the past, thereby making the instrument exogenous. In the research of Alesina et.al (2011) the measure was also found to be significantly correlated with colonial past, thereby theoretically being an explanation for historical institutions which may be related to inequality. Still, this instrument has

some pitfalls. It was developed mainly to explain economic performance and ethnic fractionalization in a country, and not inequality. This may be a problem because, compared to the wheat-sugarcane measure that has good theoretical foundations for why it may predict inequality, while artificial borders do not. The second issue is that borders seem to be more artificial in African countries and desert areas. Yet, when Alesina et.al (2011) controls for this, the instrument still shows an effect on economic performance. I therefore also control for economic performance in the main models so this pathway from Artificial borders to repression will be blocked in the models (see section control variables on page 39 to 40). However, African bias may be a problem, since in the results of Alesina et.al (2011) the p-value became weaker when controlling for African countries. This because most of the countries with artificial borders, were mostly in either African or dessert areas. A third issue with the variable is that it does not take into consideration institutional structures imposed by colonies. This may be an issue because not all colonies were treated equally or as strict, which may have resulted in different structures. These different institutional structures are important to consider, since previous studies have proposed that these institutional structures may have affected political inequality. The wheat sugarcane-variable for example is meant to capture colonies with labor intensive plantation-based economies. Economies which are related to more unequal economic institutions than colonies that relied on other forms of economies. Nonetheless, Artificial Borders is a plausible instrument for Horizontal inequality on theoretical grounds and is therefore tested in the analysis.

Based on the considerations discussed above I use two instruments. The first instrument is the one developed by Easterly (2006) which measures suitability for wheat or sugarcane. The variable is included as it fits the Engermann Sokoloff's (2002) hypothesis proposing that labor intensive plantation-based economies create structural inequality. The second instrument added to the model is artificial boarders, proposing that these predict horizontal inequality as they relate to ethnic fractionalization. Nonetheless, it is important to bear in mind that not all ethnic fragmented countries are horizontally unequal, and not all ethnic fragmented countries have bad institutions. Both instruments are aggregated to the country level, which makes it easier to replicate earlier civil war and repression studies.

### 3.3 Control Variables

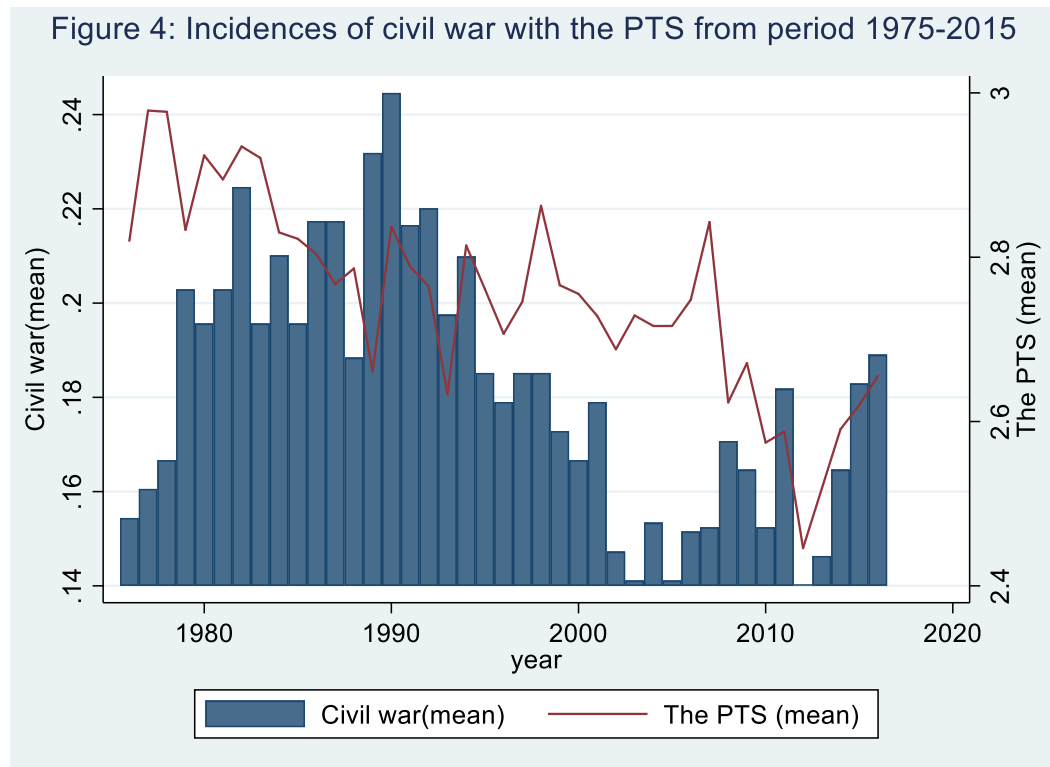
Lastly, the approach of IV-regression attempts to uncover the independent effect of the instrument log wheat-sugarcane ratio and Artificial borders on the relationship between inequality and repression. I, therefore, control for confounding factors that may correlate with the wheat-sugarcane index, inequality and repression. Based on the previous theoretical and empirical literature, I use control variables consistent with current research on inequality, civil conflict, and repression. The first control variable is GDP per capita. Previous research has uncovered that high economic growth is associated with a lower level of civil conflict and repression (Poe et.al,1999; Collier and Hoeffler,2003; Collier,2010). Economic development is associated with the states' capacity to satisfy people's needs and make them more content (De Soysa and Nordås,2007). With higher state capacity, the state can provide public goods for their inhabitants (Collier,2010). With better capacity and with a more content population, the state faces a lower level of threat and has a lower incentive to repress their people (Svolik,2013). The level of GDP per capita is also strongly and negatively associated with the level of inequality. Some argue that the level of inequality causes lower GDP, but others argue that this is subject to reversed causality and that rich countries have a higher capacity to redistribute to their people. Easterly (2007) shows, with using the instrumental variable of wheat-sugarcane ratio, that inequality is more likely to affect economic growth rather than the other way around. Since the variable is skewed and struggles with heteroscedasticity, the variable has been log transformed. It makes also more theoretical sense to interpret it in relative size because Skog (2005) argues that people don't change their behavior in terms of an absolute increase in assets. Five dollars more might not be important, but a relative increase of five percent might. A log transformation of the variable makes it possible to interpret the coefficient of GDP per capita as the approximate of a one percentage point increase. (Skog 2005, Midtbø, 2012 Ringdal 2017). Consistent with previous literature, I expect GDP to have a negative effect on political terror and a positive effect on physical integrity rights.



The figure displays the trend in GDP per capita and Political terror scale in the period from 1980 to 2015. Although the PTS shows a decline as the GDP per capita increases, the relationship is not perfect, since it does not explain the significant drop in the level of repression around 2007 or the sudden increase in the level of repression after 2011. Still it suggests the importance of including GDP per capita as control variable.

The next variable is incidence of civil war. As argued in theory section, some scholars argue that repression is a reaction to dissent and civil war, therefore this is a variation I have to control for. The variable is gathered from Uppsala Conflict data project. They define a conflict when the violence is two-sided, meaning between a state actor and a conflict group, and with 25 or greater battle related deaths (Gleditch et.al 2002). I also include a variable showing the number of years with peace after a civil war. This is to separate cases where countries that recently became peaceful, from countries that have experienced peace for many years. More years of peace tend to reduce the risk of a new conflict or civil war, which again may affect the level of repression (Poe et.al 1994).

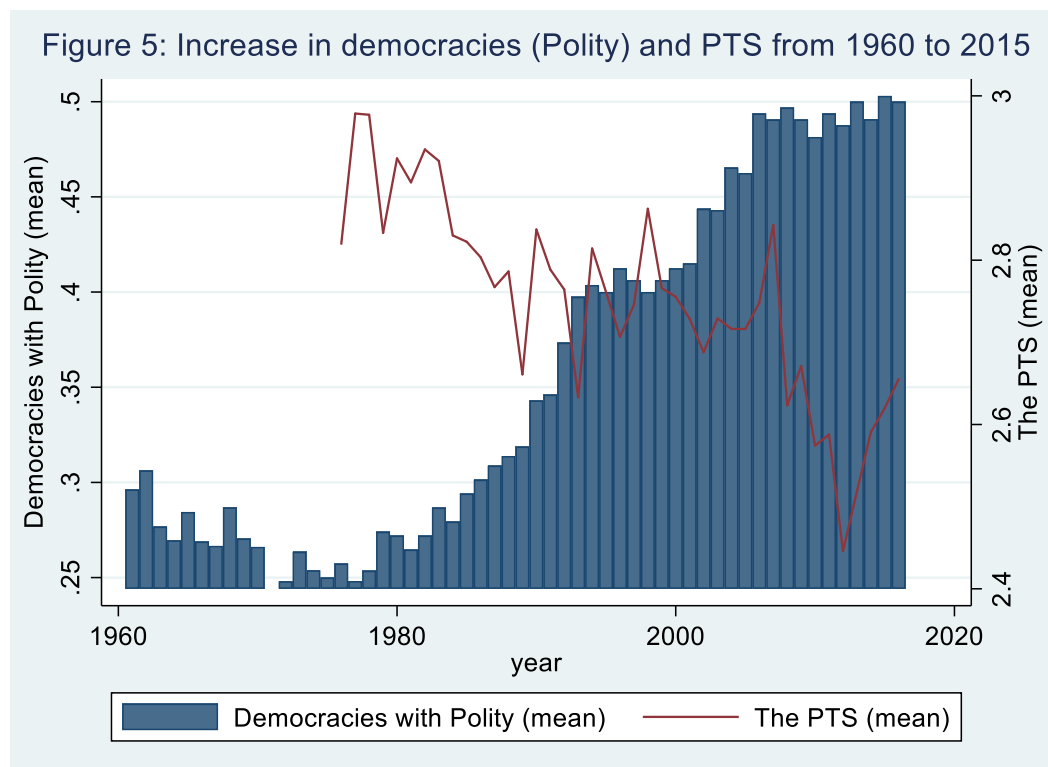




The figure shows the trend of incidence of civil with the political terror scale in the period from 1975-2015. We can see that although civil war and repression have steadily decreased after the end of the cold war, the number of civil wars has had a more significant drop than the level of repression. This indicates that that although they both have similarities in their trend, the relationship is not perfect. After 2010 we see a sudden increase in both civil war and repression, which is probably related to the Arab Spring in 2011.

The next variable is population size since greater population size seem to induce a greater risk of both conflict and state repression (Svolik,2013). A greater population means a greater number of people a leader must co-opt, which again demands a higher level of resources. This may then also affect the level of inequality. Larger population size is also in many cases related to greater geographical size, which means that the population is harder to control. This variable has also been log transformed (Skog 2008, Mehmetoglu and Jakobsen 2015). This makes this variable more normally distributed and gives a lower level of heteroscedasticity. Further, in the analysis, I add a variable that measures regime type. I use mainly the Polity index, but since the Polity-index of democracy have been criticized by some in the literature, I also use the electoral democracy index by V-Dem, which I include in a sensitivity analysis at the end of the paper at page 70 (Vreeland,2008, Svolik,2013). The measure from V-Dem goes from 0 to 1 where zero means a low score on the democracy index and 1 means a high score

on the democracy index. The measure from polity goes from -10 to 10 where -10 is a low score on democracy and 10 is high. I expect to find that a high level of democracy has a negative effect on the level of repressive strategies. A full-scale democracy tends to give a wide range of checks and balances like a free press, civil society, and institutions that can make the political leaders accountable for their actions, which makes it harder to repress (Svolik,2013). Lastly, democracies are associated with a better distribution of income and public services, which makes it necessary to include in the regression analysis. Although there have been some discussions in the literature about whether to treat regime type as a continuous variable or a dummy, I decide to not alter the variable from V-Dem or Polity.



Examining the trend in the increase of democracies and the political terror scale, we see that the level of repression has decreased steadily with the increase in number of democracies. The last control variable included in the analysis is oil and gas value. The value of oil and gas is often associated with lower quality institutions, less representativity in decision making and often a higher level of repression. Still, according to Ross (2012), this association is mixed and is dependent on many factors, like if the oil is onshore or offshore, if it is near a capital or if a secessionist group is present in the political landscape. In addition, oil and gas values seem to affect the stability of autocratic regimes. An autocratic state with oil or gas is fifty percent more likely to experience a civil conflict compared to an autocratic state that lacks oil. This again can increase the incentive to use repressive strategies. The measure is in 2000 US

dollars per capita in oil and gas exports, and because the variable is skewed, it makes sense to log transform the variable. Many countries do not have income from oil and gas. To not lose important units from the analysis, all units with zero in oil and gas value have been given a 1 dollar assigned before the log transformation.

### **3.4 Method and modeling**

This section will explain the method used in this paper. To model the effects of inequality on repression, I use time-series cross-section analysis. I do three types of “naïve” regression analysis: The first is an ordered probit which is used because the PTS-scale has only five values and can therefore be treated as a categorical variable. The second is regular OLS, using the measure of PIR. The third is a regular OLS, which uses Fariss' latent mean of human rights protection scores. The variables PIR, latent mean of human rights protection scores and PTS measure much of the same things as the PTS-scale only that PIR goes from 0 to 1 and latent mean of human rights protection scores goes from -5 to 5, where both variables can be treated as continuous variables. Both ordered probit and OLS are good designs to find patterns across countries and time points (Cameron and Trivedi, 2009). The data used in this paper contains 158 countries from the period 1990-2015. The data contains some issues concerning heteroscedasticity, skewness, and autocorrelation. To solve the issues of heteroscedasticity and skewness, some variables, like population size, GDP-per capita, Oil wealth, exclusion of an ethnic group and the largest discriminated group have been logged. For controlling for problems of simultaneity, all independent variables have been lagged by one year, based on a correlogram and previous studies (Mehmetoglu and Jakobsen 2017). I have also used Driscoll-Kraay standard errors in the OLS-regressions which control for heteroscedasticity, autocorrelation, and spatial dependence, compared to the Huber-White which are only robust to heteroscedasticity (Huber,1967; White,1980; Newey and West,1987, Driscoll and Kraay,1998, Hoechle,2007).

The first regression table has been run using an ordered probit. Since PTS has only five values and Stata does not allow for fixed effects in an ordered probit regression, I use random effects in all models. Therefore, the analyses have also been run using a lagged dependent variable instead to control for autocorrelation and some problems of endogeneity. For the second and third regression table I run two pooled OLS regressions. Using a Hausman-test, it suggests that country fixed effects might be most suitable. However, in model one, in both table two

and three, it might be a problem using a fixed effects, since I here run analyses on the Gini coefficient, and since the Gini coefficient is interpolated, fixed effects may give misleading results (Cameron and Trivedi, 2009, Mehmetoglu and Jakobsen, 2016). I, therefore, I still run fixed effects in all the OLS-regressions including the models with the Gini coefficient. For models two to five in tables two and three, there does not seem to be any problem running fixed effects since we have enough data points and none of the variables are time invariant. Therefore, all models are run with time and country fixed effects. Fixed effects are useful because it adds unit specific dummy variables for each country that account for both independent time-invariant variables, and unmeasured time-invariant variables, which eliminates the across country variation, and makes it possible to estimate a more constant marginal effect. This again makes the results more robust in testing causality (Cameron and Trivedi, 2009, Mehmetoglu and Jakobsen, 2017). For the IV-modeling I will use a random effect, since a fixed effect omits time-invariant variables from the model and the wheat sugarcane index and the fractal index are both time invariant. I run first two IV-regressions with wheat sugarcane. The first with the Physical integrity rights measure by V-Dem, second with the latent mean of human rights protections scores. Then I run two IV-regression with the fractal index using the same dependent variables as in the two former IV-regressions.

Testing for the assumptions for time-series regression, the results of the Wooldridge test show that the data has issues with autocorrelation (Wooldridge, 2002; Mehmetoglu and Jakobsen, 2016). The Dickey-Fuller test showed the physical integrity rights variable to be non-stationary. Also using the Breuch-Pagan test, it also shows that there are problems with heteroscedasticity. To solve problems of autocorrelation, there are many potential solutions (Mehmetoglu and Jakobsen, 2016). One is to use a lagged dependent variable, which takes up some variation, and is recommended by some authors when the data are non-stationary (Nickel, 1983; Mehmetoglu and Jakobsen, 2017). Recently though, the use of a lagged dependent variable has been criticized because a lagged dependent variable can lead to bias downward, meaning that the coefficient become smaller in an inaccurate way, which again may lead to misleading results and false negatives (Aachen 2003, Keele and Kelly 2005). Some recent studies have also shown that to use a lagged dependent variable with a non-stationary dependent variable may lead to wrong results and conclusions arguing that the model is wrong (Aachen 2003, Keele and Kelly 2005). It is then better to use other measures to combat autocorrelation. Another solution for battling autocorrelation could be to use the PCSE-

estimator, but because of time gaps in the dataset, I may need to delete data points that can be important for the analysis. Recent studies also suggest that using Newey-West or Driscoll-Kraay standard errors is enough to combat both the problems of autocorrelation and heteroscedasticity. It does not change the size of the coefficients, but inflates the standard errors, reducing the risk of biased results (Newey and West, 1987; Driscoll and Kraay, 1998; Hoechle, 2008). I choose Driscoll-Kraay standard errors over Newey West since Driscoll-Kraay also takes spatial dependence into consideration in addition to heteroscedasticity and autocorrelation (Driscoll and Kraay, 1998).<sup>4</sup>

### 3.5 Modelling for endogeneity

A common problem using large panel data is to find out if the results from the regression is a result of true causality or reflect reversed causality or omitted variable bias. There are many ways to control for endogeneity but none of the methods are perfect. One is testing for Granger causality, using an F-test (Granger, 1969; Burkhart and Beck, 1994). I use an F-test for the five different measures of inequality and do five individual tests with each variable with the regression-variable. I use the f-test to see which variable is the most powerful, to see if inequality granger causes repression or not. However, a granger causality-test has limits. Some have argued that a Granger causality test is a flawed test because it does not take in to account the problem of omitted variables, thereby is limited in solving the risk of reversed causality (Eichler, 2012). Others have also argued that to do a granger causality-test, you should only do it more economic variables like FDI, and GDP, since it was for economic variables it originally was intended for (Granger, 2004). Although my measures are economic in nature, they are still ordinal measures and not continual, therefore a Granger test may have its limits. Therefore, although I do a Granger test, I acknowledge its shortcomings, which is why also do an instrumental variable approach, which will be the focus in the examination of endogeneity. Using an instrumental variable is better since it also takes into consideration the problems of omitted variables (Cameron and Trivedi, 2009).

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<sup>4</sup> I tried to do the same analyses with Newey West, and the results did not differ. Therefore I can be sure that it will not affect my result in choosing Driscoll-Kraay over Newey-West.

## 4.0 Analysis

This section introduces three main regression analysis. The first table shows the output from the ordered probit, using the Political terror scale (PTS) as the dependent variable. In the first models, I use the Gini-coefficient which measures vertical inequality and can be used as a proxy for grievance. Additionally, I include the control variables. The second models look at ethnically discriminated groups excluded from power and its effect on political terror, with the same control variables as the first model. The third models include the second horizontal measure, which is the share of the largest ethnic group excluded from power. The fourth models look at power distributed among social groups, which is a proxy for horizontal equality. The fifth looks at power distributed among the social class, which is a proxy for vertical inequality. Model one to five have a lagged dependent variable, including lagged independent variables and controls.

**Tabell 1. Ordered probit PTS**

VARIABLES	PTS	PTS	PTS	PTS	PTS
	1990-2015	1990-2006	1990-2006	1990-2015	1990-2015
PTS	1.142*** (0.069)	1.098*** (0.063)	1.103*** (0.064)	1.174*** (0.058)	1.158*** (0.057)
Gini	0.014*** (0.004)				
Log. Exclusion of ethnic group t-1		0.054*** (0.016)			
Log. Largest ethnic group t-1			0.029*** (0.011)		
Power distributed by social class t-1				-0.070** (0.034)	
Power distributed by social group t-1					-0.144*** (0.033)
Civil war t-1	0.591*** (0.110)	0.496*** (0.113)	0.495*** (0.115)	0.492*** (0.090)	0.457*** (0.087)
Years of peace t-1	-0.004* (0.002)	-0.004* (0.002)	-0.003 (0.002)	-0.003* (0.002)	-0.003 (0.002)
Regime type t-1	-0.016*** (0.006)	-0.012** (0.005)	-0.015*** (0.005)	-0.016*** (0.005)	-0.006 (0.006)
Log. GDP per capita t-1	-0.128*** (0.045)	-0.169*** (0.033)	-0.163*** (0.036)	-0.135*** (0.032)	-0.139*** (0.033)
Log population t-1	0.159*** (0.035)	0.101*** (0.023)	0.092*** (0.023)	0.104*** (0.021)	0.119*** (0.024)
Log Oil and gas value t-1	0.012 (0.017)	0.028* (0.015)	0.027* (0.016)	0.025* (0.013)	0.023* (0.013)
/cut1	2.999*** (0.659)	0.771 (0.526)	0.946* (0.539)	1.739*** (0.415)	1.875*** (0.433)
/cut2	4.835*** (0.665)	2.689*** (0.527)	2.867*** (0.537)	3.603*** (0.415)	3.745*** (0.434)
/cut3	6.537*** (0.667)	4.310*** (0.535)	4.482*** (0.543)	5.305*** (0.425)	5.458*** (0.446)
/cut4	8.346*** (0.711)	5.941*** (0.577)	6.104*** (0.588)	6.969*** (0.472)	7.133*** (0.492)
Observations	1,823	1,940	1,940	2,870	2,870

Robust standard errors in parentheses

Consistent with previous studies on conflict and military intervention, the Gini coefficient shows a positive effect on the level of political terror (Svolik, 2012). The result is also significant at one percent which is consistent with the first hypothesis. In relation to a previous study on repression, I note that economic growth also here seems to have a negative effect on political terror. (Poe et.al,1999). Population size and civil war seem to have a positive effect on political terror, which is also consistent with previous studies. Lastly regime type and years of peace show a negative effect on political terror which was expected from previous literature (Collier,2010; Acemoglu and Robinson,2013)

In the second model, I look at ethnic groups excluded from power. Like studies from Østby (2008), Cederman (2011) and Buhaug et.al (2014) on HI and civil conflict, the output shows a positive relationship between HI and political terror. The effect is significant at the one percent level. There have been some changes in the coefficients of population size and civil war. Although this is most likely due to more observations in model two than model one. The other control variables are consistent with model one.

In the third model, I look at the largest ethnic group excluded from power. Consistent with model two and previous studies on conflict, the variable shows a positive effect on the level of state repression. The result is significant at the one percent level. The controls are still consistent with model one and two.

The fourth model looks at power distributed among social groups in a country and can be seen as a measure of horizontal equality. The results show a negative association with repression which is then consistent with model two to three since it is likely that more equality leads to less political terror when more inequality leads to more political terror. The result is also highly significant at one percent level. The controls are consistent with model one to three. Finally moving to the fifth model, it uses the power distributed among the social class in a country as the independent variable. This variable is a measure of vertical inequality, and the results show a negative association with repression which is then consistent with model one and previous literature. The result is significant at one percent level. The controls are consistent with model one to four.

Moving forward to the second regression analysis in table two, I switch the variable political terror scale with the physical integrity rights scale from V-Dem. The direction variable is interpreted in the opposite way of the PTS where low levels in the physical integrity rights index mean a high level of repression, and high levels mean low levels of repression. I use the same control variables as in table one. I run an OLS regression with time and country fixed effects.



**Table 2. OLS showing the relationship between inequality and Physical integrity rights**

VARIABLES	PIR 1990-2015	PIR 1990-2006	PIR 1990-2006	PIR 1990-2015	PIR 1990-2015
Gini	-0.001* (0.001)				
Log. Exclusion of ethnic group t-1		-0.018*** (0.003)			
Log. Largest ethnic group t-1			-0.012*** (0.002)		
Power distributed by social class t-1				0.050*** (0.007)	
Power distributed by social group t-1					0.061*** (0.009)
Civil war t-1	-0.042*** (0.008)	-0.052*** (0.012)	-0.049*** (0.013)	-0.059*** (0.007)	-0.056*** (0.007)
Years of peace t-1	0.000 (0.000)	0.001* (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Regime type t-1	0.012*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.017*** (0.001)
Log. GDP per capita t-1	0.056*** (0.014)	0.016 (0.012)	0.015 (0.012)	0.033*** (0.010)	0.040*** (0.007)
Log population t-1	0.108** (0.039)	0.033 (0.034)	0.041 (0.034)	0.047** (0.020)	0.056*** (0.018)
Log Oil and gas value t-1	0.002 (0.003)	-0.001 (0.004)	-0.000 (0.003)	-0.003 (0.002)	-0.003 (0.002)
Constant	0.000 (0.000)	-0.210 (0.566)	-0.271 (0.578)	-0.424 (0.365)	-0.645* (0.314)
Observations	2,226	2,192	2,192	3,607	3,607
Number of groups	143	153	153	158	158

Standard errors in parentheses

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

In table two, consistent with table one, the Gini coefficient shows a negative effect on PIR, meaning higher Gini gives lower levels of physical integrity rights, which means higher levels of repression. The result is significant at the one percent level. Further I calculate for the substantive effect. Calculating for the substantive effect, I find out that an SD decrease in Gini creates a change in the level of state repression of almost 4 percent of a standard deviation. I consider 15 or under a small effect, 15 to 40 a medium effect, and everything over 40 a strong effect (Cameron and Trivedi 2008, Woolridge 2006)<sup>5</sup>. Therefore, it is enough to say that the effect of Gini is not strong. Civil war gives a negative effect on PIR which is consistent with the results in table 1. Peace years shows a positive small effect consistent with table 1. Re-

<sup>5</sup> Example of the the calculation is: Coefficient of gini \* standard deviation of gini/ standard deviation of Physical integrity rights

gime type shows a positive effect on physical integrity rights and is significant at the one percent level. GDP shows a positive effect on physical integrity rights, although this time not significant. Population size shows a positive effect on physical integrity rights, which is the opposite result of what I found in table 1. The result is significant at the one percent level. Oil and gas show a negative effect on physical integrity rights, which is consistent with table 1. The result is not significant.

Turning to model two, table two, I examine the variable on excluded discriminated ethnic groups and its effect on PIR. The variable shows a negative effect and is significant at the 5 percent level. Calculating for the substantive effect using an SD-decrease in ethnic exclusion creates a change in state repression of 12,5 percent of a standard deviation. The other controls are consistent with model 1.

In model 3, I look at the size of the largest discriminated ethnic group excluded from power. Consistent with model 2 and previous studies on conflict, the variable shows a positive effect on the level of state repression. The results are significant at the one percent level. When I calculate for the substantive effects using SD-increase in largest ethnic group, creates a change of 12,9 percent of a standard deviation. The controls are still consistent with model 1 and 2.

Turning to model 4 in table 2, I look at the share of power distributed among social class and its effect on PIR. The result is positive and is significant at the 1 percent level. Calculating for the substantive effect, a one SD-increase in power distributed among social class creates a change of 18 percent of a standard deviation. With a few small changes, the control variables are consistent with previous model.

Finally, in model 5, table 2, I look at the share of power distributed among social class and its effect on PIR. The result shows a positive effect on PIR and is significant at the percent level. Calculating for the substantive effect using SD-increase in power distributed among social class creates a change of 26,2 percent of a standard deviation. Little change in the control variables

I move to table three where I have switched physical integrity rights variable with the variable Farris Latent mean of human rights protections scores. As the physical integrity rights variable from V-Dem, the variable is interpreted as the higher score, the more are physical integrity rights respected.

**Table 3. OLS with Farris Latent mean of human rights protection scores**

VARIABLES	Farris LM 1990- 2013	Farris LM 1990- 2006	Farris LM 1990- 2006	Farris LM 1990- 2013	Farris LM 1990- 2013	Farris LM 1990- 2013
Gini	0.005 (0.004)					
Log. Exclusion of ethnic group t-1		-0.030** (0.011)				
Log. Largest ethnic group t-1			-0.026*** (0.007)			
Power distributed by social class t-1				0.035 (0.029)		
Power distributed by social group t-1					0.128*** (0.020)	
Equal access index t-1						0.356** (0.141)
Civil war t-1	-0.407*** (0.041)	-0.459*** (0.054)	-0.452*** (0.054)	-0.520*** (0.033)	-0.521*** (0.032)	-0.521*** (0.032)
Years of peace t-1	0.010*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.008*** (0.001)	0.008*** (0.001)	0.008*** (0.001)
Regime type t-1	0.028*** (0.006)	0.024*** (0.004)	0.025*** (0.004)	0.034*** (0.003)	0.031*** (0.003)	0.033*** (0.003)
Log. GDP per capita t-1	0.036 (0.061)	0.240*** (0.019)	0.240*** (0.020)	0.194*** (0.018)	0.205*** (0.022)	0.196*** (0.019)
Log population t-1	-0.425*** (0.099)	0.657*** (0.064)	0.667*** (0.061)	0.220** (0.101)	0.224* (0.108)	0.176 (0.118)
Log Oil and gas value t-1	-0.034*** (0.012)	-0.024** (0.010)	-0.023** (0.010)	-0.021*** (0.006)	-0.023*** (0.006)	-0.019*** (0.006)
Constant	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-4.324** (2.084)
Observations	2,125	2,208	2,208	3,404	3,404	3,473
Number of groups	142	154	154	155	155	158

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In table three, consistent with table one and two, the Gini coefficient shows a negative effect on Farris latent mean of human rights protection scores, meaning higher level of Gini the less are physical integrity rights respected, which means higher levels of repression. Still the result here is not significant. The controls are consistent with table two, except that oil and gas value now show a significant negative impact on physical integrity rights

Turning to model two, table three, I look at the variable on excluded discriminated ethnic groups and its effect on PIR. The variable shows a negative effect and is significant at the one percent level. I calculate the substantive effects; I find out that an SD increase in exclusion of

ethnic group creates a change in physical integrity rights of 4,6 percent The controls are consistent with the previous model.

In model three, I look at the largest discriminated ethnic group excluded from power. Consistent with model two and previous studies on conflict, the variable shows a positive effect on the level of state repression. The result is significant at the one percent level. Calculating for the substantive effects, I find out that an SD increase in exclusion of ethnic group creates a change in physical integrity rights of 6.1 percent The controls are consistent with the previous model. The controls are still consistent with model one and two.

Turning to model four, table three, I look at the share of power distributed among social class and its effect on PIR. The result is positive but is not significant. This inconsistent with the results in table two. The controls are consistent with the previous models

Finally, in model five, table three, I look at the share of power distributed among social groups and its effect on PIR. The result shows a positive effect on PIR and is significant at the percent level. When calculating for the substantive effects, I find that an SD increase in power distributed by social group creates a change in physical integrity rights of 8 percent. No change in the control variables from previous models.

After doing an ordered probit regression and two OLS regressions, the results are fairly consistent. However, there are some differences. The Gini coefficient and equality in terms of power distributed by social class are significant in the two first regressions, but not in the last regression. This may be because of different operationalization in the latent mean of human rights protection scores by Fariss (2014) compared to the other variables, but there may also be other factors at play here. I can also not be certain if the previous models reflect a real relationship between inequality and repression, since this relationship could be driven either by reversed causality or omitted variables. To examine these concerns, I now turn to a Granger Causality test and my IV-regressions.

## 4.1 Endogeneity

### 4.1.1 Granger test

To be sure that the results are robust, I have conducted a granger causality-test and instrumental variable analyses. I start with doing two granger tests with three and five lags on the five

different inequality measures. I find no claim for Granger causality (Appendix 7.3). None of the F-tests show significant results, which mean we cannot conclude from this that inequality granger causes repression one way or the other way around (Granger,1969, Granger,2004, Burkhart and Beck,1994). This may also indicate that a Granger causality is not the best way of solving the endogeneity problem and we must look further doing an analysis with an instrumental variable (Cameron and Trvedi,2009).

Theoretically the result can mean two things. First, it might show that repression and inequality might cause each other, instead of that one variable only causes the other. This is supported by the theory of Acemoglu and Robinson (2013) who argues that it is more of a vicious circle where the extractive institutions intensify the level of repression which again intensifies the negative circle of extractive institutions. Inequality may lead to a more unstable regime, which again sustains the level of inequality. Secondly, it might mean that Granger causality is not the best tool to test for reversed causality since it does not consider omitted variables (Eichler,2012). A complex concept as repression might be determined by many factors. A granger test only looks at the variance between repression and inequality, and therefore this test might be insufficient to solve the problem of endogeneity.

#### **4.1.2 Instrumental variable approach**

I use two instrumental variables. The first instrumental variable I use is the logged wheat-sugar ratio by Easterly (2006). Recall that the variable is developed to look at mainly VI which means that the results may differ between the VI and HI measures. I therefore is a second instrumental variable in a separate analysis, where I use the fractal index for artificial borders. Since both the wheat-sugar-ratio and the fractal index are time-invariant, I only do OLS IV-regressions with random effects. I do an instrumented OLS and not an instrumented Generalized least squares (GLS) since GLS methods in time-series have shown to give misleading results when using time-series data (Beck and Katz,1995). Beck and Katz (1995, p644) argue that it is a problem using GLS-estimates "if the length of the time-frame,  $T$ , is smaller than the number of units,  $N$ ". The wheat-sugar measure includes 119 countries and my dataset has data points from 1990 to 2015, which means that GLS estimates are not correct to use here either. In my analysis I use robust standard errors clustered around countries which are meant to limit some of the problems concerning heteroskedacty and autocorrelation. Most analyses with a similar approach don't do the same, and use simple robust standard errors instead (Acemoglu, Robinson and Johnson 2001, Easterly 2007, Rørbæk and Knutsen 2017 and Houle 2018). This

mean that my tests are more stringent than theirs, which make it less likely to find significant results.<sup>6</sup> I do four IV regression. Two with wheat sugarcane on the dependent variables and PIR and Farris Latent mean. Then two IV-regression with Artificial borders. I first show the first stage and then the second stage of each analysis. Because of space and since the first stages for each instrument don't vary much, I only include one of the first stages for wheat sugarcane and one of the first stages for artificial borders. The rest of the first stages can be found in the appendix

**Table 4.1 IV-regression First stage showing effect of wheat sugarcane on inequality<sup>7</sup>**

VARIABLES	Gini	ETG	LDG	PDSG	PDSC
	1990-2015	1990-2006	1990-2006	1990-2015	1990-2015
Log. Wheat sugar	-23.41***	0.689	1.71	1.579***	0.851**
	-4.214	-0.598	-1.437	-0.432	-0.357
Civil war t-1	-1.913	0.662	1.04	-0.343**	0.208
	-1.546	-0.456	-0.633	-0.157	-0.169
Years of peac t-1	-0.0359	-0.00598	-0.0249	0.00800**	0.0109***
	-0.0364	-0.0112	-0.0164	-0.00361	-0.00327
Regime type t-1	0.351**	-0.0970**	-0.0264	0.0912***	0.0565***
	-0.154	-0.0395	-0.0479	-0.0184	-0.0148
Log. GDP per capita t-1	0.0925	0.261	0.0584	0.000209	0.0408
	-0.812	-0.177	-0.284	-0.0772	-0.0743
Log population t-1	-0.0759	-0.0107	0.278	0.0107	-0.0588
	-0.726	-0.0955	-0.177	-0.0572	-0.0452
Oil and gas value t-1	-0.241	-0.133*	-0.169	0.00856	-0.00572
	-0.351	-0.0679	-0.108	-0.032	-0.0308
Constant	45.66***	-10.00***	-11.68***	0.0923	0.775
	-13.47	-1.556	-3.272	-1.091	-0.914
Observations	1,881	1,745	1,745	2,779	2,779

Robust standard errors in parentheses

<sup>6</sup> I did also run analyses with simple robust standard errors that are not clustered around countries. The results are more robust when I don't used clustered standard errors, also in the sensitivity analyses. Because of space, these tests will not be shown in this paper, since I mean that the results with clustered standards are more convincing. The results without clusted standard errors, can be given on request.

<sup>7</sup> ETG= exlcusion of ethnic group, LDG=Largest discriminated group, PDSG= Power distributed by social group, PDSC= Power distributed by social class

**Table 4.2: IV regression second stage with PIR and the Wheat sugar ratio as an instrument**

VARIABLES	PIR		PIR		PIR	
	1990-2015	1990-2006	1990-2006	1990-2015	1990-2015	1990-2015
Gini	-0.005** (0.002)					
Log. Exclusion of ethnic group t-1		0.158 (0.156)				
Log. Largest ethnic group t-1			0.064 (0.055)			
Power distributed by social group t-1				0.058* (0.034)		
Power distributed by social class t-1					0.107 (0.068)	
Civil war t-1	-0.093*** (0.031)	-0.203 (0.134)	-0.165** (0.078)	-0.064** (0.029)	-0.106*** (0.029)	
Years of peace t-1	0.002*** (0.001)	0.003 (0.002)	0.003* (0.002)	0.001** (0.001)	0.001 (0.001)	
Regime type t-1	0.024*** (0.003)	0.041*** (0.015)	0.028*** (0.004)	0.020*** (0.004)	0.019*** (0.004)	
Log. GDP per capita t-1	0.027** (0.013)	-0.018 (0.049)	0.020 (0.023)	0.028*** (0.010)	0.024* (0.013)	
Log population t-1	-0.026** (0.011)	-0.015 (0.018)	-0.034 (0.024)	-0.017** (0.007)	-0.010 (0.007)	
Log Oil and gas value t-1	-0.002 (0.005)	0.022 (0.023)	0.011 (0.014)	0.000 (0.004)	0.001 (0.005)	
Constant	0.961*** (0.228)	2.187 (1.617)	1.366* (0.766)	0.586*** (0.128)	0.536*** (0.137)	
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	
Country fixed effects	No	No	No	No	No	
Time fixed effects	Yes	Yes	Yes	Yes	Yes	
First-stage F-statistics	30.85***	1.33	1.42	13.36***	5.68**	
Kleibergen-Paap rk LM statistic	535.2***	6.84	18.2091**	298.234 ***	92.6 ***	
Woolridge's robust score test	0.0787	0.0723	0.0773	0.8931	0.4651	
Number of countries	111	114	114	115	115	
Observations	1,881	1,745	1,745	2,779	2,779	

Robust standard errors in parentheses

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

Looking at the five inequality measures, the IV-regressions show mixed results. In all the first stage analyses the Wheat Sugar ratio shows a highly significant effect on the different inequality measures, except exclusion of ethnic groups and largest discriminated group. Moving to stage two of the IV-regression, the Gini-coefficient and power distributed by social group showed, consistent with previous results, that VI and HI leads to a higher level of repression. Calculating for substantive effects, with and SD-increase in Gini creates a change in physical integrity rights of 19 percent. The substantive effect of power distributed by social group is 25 percent. A Woolridge robust score test showed a significant result for endogeneity, thereby



making an IV-regression more efficient than regular regression analysis. Looking at HI, the results were mixed. Both exclusion of discriminated groups and largest discriminated group, showed different results when using IV-regression compared to a regular regression. The result was also insignificant. For the variable power distributed by social group, the IV-regression was consistent with the regular OLS, showing a positive significant effect on PIR.

Thereby showing that the more equal power distribution among social groups, the more is physical integrity rights respected. The Wooldridge robust score test does not show a significant result for endogeneity, thereby showing that a regular OLS is probably as efficient as an IV-regression. Looking at the postestimation results, the F-test shows an F-value greater than 10, except in the case of ethnic exclusion, largest discriminated group and power distributed by social class. The Kleibergen–Paap LM test are significant at the one percent level in all the models except in model two and three, which mean I can reject the null hypothesis that my instrument is weak.

Moving to the fifth table, I do the same IV-regression, but with again with Farris Latent mean of human rights protection scores measure of human rights instead of the physical integrity rights measure by V-Dem. For the same reasons as in the regular OLS, I use the Latent mean of human rights protection scores-measure because it is more equipped to deal with biases when it comes to coding and measuring human rights across time. In the table, the independent variables are the same, and the controls are the same. Because wheat-sugarcane ratio is time invariant the model is a random model with time-dummies.

**Table 5.2 IV-regression with Farris Latent mean of human rights protection scores, second stage**

VARIABLES	Farris LM 1990-2013	Farris LM 1990-2006	Farris LM 1990-2006	Farris LM 1990-2013	Farris LM 1990-2013
Gini	-0.044*** (0.014)				
Log. Exclusion of ethnic group t-1		1.341 (1.232)			
Log. Largest ethnic group t-1			0.623 (0.639)		
Power distributed by social group t-1				0.589** (0.249)	
Power distributed by social class t-1					1.136** (0.555)
Civil war t-1	-0.854*** (0.159)	-1.691 (1.066)	-1.384** (0.703)	-0.572*** (0.176)	-0.981*** (0.219)
Years of peace t-1	0.007** (0.003)	0.019 (0.015)	0.028 (0.020)	0.006* (0.004)	-0.001 (0.007)
Regime type t-1	0.045*** (0.011)	0.171 (0.126)	0.059 (0.042)	-0.013 (0.028)	-0.024 (0.037)
Log. GDP per capita t-1	0.226*** (0.074)	-0.097 (0.381)	0.179 (0.250)	0.255*** (0.066)	0.198** (0.098)
Log population t-1	-0.316*** (0.049)	-0.303** (0.144)	-0.480** (0.242)	-0.304*** (0.043)	-0.220*** (0.060)
Log Oil and gas value t-1	-0.007 (0.026)	0.197 (0.189)	0.123 (0.155)	0.017 (0.028)	0.026 (0.034)
Constant	5.332*** (1.167)	16.313 (13.103)	10.431 (8.828)	2.808*** (0.813)	2.079** (1.057)
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	28.36***	1.34	1.1	15.18***	5.84**
Kleibergen-Paap rk LM statistic	472.9***	6.93172	13.9443*	310.66***	87.22***
Woolridge's robust score test	0.211	0.0071	0.0058	0.1136	0.0256
Number of countries	108	112	112	113	113
Observations	1,881	1,745	1,745	2,779	2,779

Robust standard errors in parentheses

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

The first stage results are consistent with the previous one, where wheat sugarcane show a significant effect on the inequality measures except on ethnic exclusion and size of the largest discriminated group (See appendix). Gini shows still a negative effect on physical integrity rights and is significant at the one percent level. When calculating for the substantive effect,

And SD-increase in The Gini coefficient creates a change in the latent mean of protections scores of 35,4 percent, which is a medium effect. The variables exclusion of ethnic groups and the size of the largest ethnic group still show no significant effect on physical integrity rights, which are poorly predicted by the instrumental variable. Power distribution by social class and social group both show a positive effect on physical integrity rights at the five percent level, with a substantive effect of almost 53 percent. Now the Wooldridge robust score test is not significant, meaning I cannot reject the null hypothesis that the regressors are exogenous. However, it is the postestimation statistics that matter the most. The postestimation test shows an F greater than 10 for all the variables except ethnic exclusion, the largest discriminatory group, and power distributed by social class. Looking at the Kleibergen–Paap LM test, the test reject the null hypothesis that my instrument is weak at the one percent level, indicating that my instrument is predicting inequality quite well.

To sum up, the IV-regressions show by using wheat-sugarcane as an instrument for inequality, that different inequalities seem to affect the level of repression in a country. The most robust result is the Gini measure, power distributed by social group. Still the results point in the direction that inequality probably affects the level of repression.

Moving to the next IV-regression in table six, I use the fractal index as the instrument to examine the relationship between inequality and repression. I use the same independent variables as in the previous IV-regression. The first table include the physical integrity rights- variable from V-Dem and the second include the dependent variable developed by Fariss (2014),

**Table 6.1 IV-regression first stage with Artificial borders**

VARIABLES	Gini	ETG	LDG	PDSG	PDSC
	1990-2015	1990-2006	1990-2006	1990-2015	1990-2015
Log. Fractal index	-7.676	11.42***	-148.9***	3.676	-6.284
	-9.113	-4.012	-44.87	-3.513	-14.48
Civil war t-1	1.050**	-0.275*	-0.518	0.244	1.420**
	-0.508	-0.141	-1.814	-0.156	-0.618
Years of peac t-1	-0.0026	0.0104***	-0.0299	0.00984***	-0.0194
	-0.011	-0.00361	-0.0458	-0.00348	-0.0161
Regime type t-1	-0.0896***	0.0894***	0.373**	0.0606***	-0.0748*
	-0.0293	-0.0161	-0.157	-0.0123	-0.0414
Log. GDP per capita t-1	0.345**	0.0633	-1.422*	0.0872	0.441*
	-0.176	-0.0605	-0.755	-0.0599	-0.247
Log population t-1	0.104	0.0338	-1.045	-0.0251	0.462**
	-0.119	-0.0504	-0.742	-0.046	-0.2
Oil and gas value t-1	-0.0733	-0.0312	-0.0812	-0.0213	-0.121
	-0.075	-0.0316	-0.379	-0.028	-0.104
Constant	-12.54***	-1.046	77.46***	-0.182	-17.66***
	-1.78	-0.952	-12.74	-0.858	-3.08
Observations	1,790	2,830	1,756	2,830	1,790

Robust standard errors in parentheses

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

**Table 6.2: IV-regression second stage using Artificial Borders as instrument, with PIR**

VARIABLES	PIR 1990-2015	PIR 1990-2006	PIR 1990-2006	PIR 1990-2015	PIR 1990-2015
Gini	-0.004 (0.005)				
Log. Exclusion of ethnic group t-1		-0.114 (0.155)			
Log. Largest ethnic group t-1			-0.140 (0.332)		
Power distributed by social group t-1				0.070 (0.054)	
Power distributed by social class t-1					0.219 (0.240)
Civil war t-1	-0.085*** (0.030)	0.025 (0.175)	0.103 (0.476)	-0.067** (0.028)	-0.140** (0.062)
Years of peace t-1	0.002*** (0.001)	0.002 (0.002)	-0.001 (0.007)	0.001 (0.001)	-0.000 (0.002)
Regime type t-1	0.023*** (0.003)	0.012 (0.014)	0.012 (0.026)	0.017*** (0.006)	0.010 (0.015)
Log. GDP per capita t-1	0.029* (0.015)	0.083 (0.058)	0.105 (0.147)	0.035*** (0.010)	0.021 (0.029)
Log population t-1	-0.025* (0.013)	-0.008 (0.021)	0.045 (0.152)	-0.019** (0.010)	-0.011 (0.013)
Log Oil and gas value t-1	-0.008 (0.006)	-0.015 (0.016)	-0.023 (0.042)	-0.003 (0.005)	-0.000 (0.010)
Constant	0.908** (0.418)	-0.899 (1.965)	-1.918 (5.819)	0.584*** (0.159)	0.616** (0.261)
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	11.01***	0.71	0.19	8.10***	1.1
Kleibergen-Paap rk LM statistic	152.83***	7.89	2.46*	154.33***	16.29
Woolridge's robust score test	0.7154	0.2087	1.71091	0.9692	0.326
Number of countries	109	118	118	119	119
Observations	1,881	1,745	1,745	2,779	2,779

Robust standard errors in parentheses

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

**Table 7: IV-reg using artificial borders as instrument on Dep.var Farris LM**

VARIABLES	Farris LM 1990-2013	Farris LM 1990-2006	Farris LM 1990-2006	Farris LM 1990-2013	Farris LM 1990-2013
Gini	-0.039** (0.020)				
Log. Exclusion of ethnic group t-1		-1.196 (1.324)			
Log. Largest ethnic group t-1			-2.626 (10.092)		
Power distributed by social group t-1				0.655* (0.372)	
Power distributed by social class t-1					1.879 (1.642)
Civil war t-1	-0.862*** (0.173)	0.387 (1.457)	2.559 (13.168)	-0.687*** (0.159)	-1.304*** (0.473)
Years of peace t-1	0.007** (0.003)	0.011 (0.014)	-0.033 (0.177)	0.003 (0.004)	-0.008 (0.017)
Regime type t-1	0.036*** (0.010)	-0.077 (0.114)	-0.174 (0.767)	-0.026 (0.038)	-0.083 (0.106)
Log. GDP per capita t-1	0.241*** (0.071)	0.672* (0.393)	1.366 (3.874)	0.257*** (0.062)	0.130 (0.201)
Log population t-1	-0.310*** (0.052)	-0.059 (0.213)	1.057 (4.938)	-0.238*** (0.043)	-0.143 (0.100)
Log Oil and gas value t-1	-0.042 (0.028)	-0.130 (0.122)	-0.345 (1.132)	-0.001 (0.034)	0.014 (0.064)
Constant	5.156*** (1.534)	-14.084 (16.723)	-45.565 (179.137)	1.941** (0.796)	1.608 (1.747)
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	12.9215***	0.79	0.063	6.89***	1.089
Kleibergen-Paap rk LM statistic	163.82***	7.16	0.76	123.53***	15.06*
Woolridge's robust score test	0.3718	0.0318	0.0224	0.2465	0.0748
Number of countries	107	118	118	116	116
Observations	1,881	1,745	1,745	2,779	2,779

Robust standard errors in parentheses

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

Looking at the results from table 6 and 7 jointly. In table 6 none of the results concerning the dependent variable physical integrity rights from V-Dem show a significant effect on repression. The postestimation test, show F-values that are 8 or under, which may indicate that artificial borders are a weak instrument of predicting inequality. Examining table 7, the Gini Coefficient and power distributed by social group show a significant effect on latent mean of protection scores, which is in line with the previous results. Examining the post-estimation tests, the F-values are 8 or under, which again may indicate that the fractal index still may be

a weak instrument in predicting inequality. Nonetheless these results are remarkably consistent with the Gini, and the Kleibergen–Paap LM test statistics are strong in the case of the Gini Coefficient and equality in terms of power distributed by social group

#### **4.2 Validation and sensitivity analysis:**

This section includes a couple of sensitivity analysis. As discussed in methods section, there are some issues in relation to the exclusion restriction when examining the issue of endogeneity. One was that slavery was itself a repressive institution, which may affect the level of repression today. Although I theoretically argued that this is probably not the case, I do a robustness-test in relation to this issue. I re-ran the IV-regressions but this time with two new control variables. One is the number of imported slaves in a given country in 1750, a measure developed by Nunn (2007). A problem with this measure is that it only captures 28 countries. I then give all the missing values a zero, so the observations don't drop from the analysis. I also make a missing-dummy so important units don't drop from the analysis. This is not an ideal solution, since a missing value does not mean that a country did not experience slave importation, although slave importation was largely restricted to the Americas. I also include another colonial variable, which is a colonial dummy, developed by Alesina et.al (2011), which explains if a country was colonized or not. One means that the country was not colonized, and a zero means that the country was colonized. I do four IV-regressions with these controls. Two of them do not show significant results.

I move to the first IV-regression with slave controls. Here I look at physical integrity rights as the dependent variable, and look at the same measures of inequality as independent variables. I further include the same controls as in the previous section, including the slave and colonial controls.

**Table 8. IV: regression using wheat-sugarcane and with slavery controls<sup>8</sup>**

VARIABLES	PIR 1990- 2015	PIR 1990- 2006	PIR 1990- 2006	PIR 1990- 2015	PIR 1990- 2015
Gini	-0.009* (0.005)				
Log. Exclusion of ethnic group t-1		0.041 (0.046)			
Log. Largest ethnic group t-1			0.047 (0.066)		
Power distributed by social group t-1				0.036 (0.035)	
Power distributed by social class t-1					0.078 (0.082)
Civil war t-1	-0.091*** (0.032)	-0.122** (0.050)	-0.151 (0.094)	-0.068** (0.029)	0.098*** (0.030)
Years of peace t-1	0.002*** (0.001)	0.002*** (0.001)	0.003* (0.002)	0.001** (0.001)	0.001 (0.001)
Regime type t-1	0.024*** (0.004)	0.030*** (0.005)	0.028*** (0.004)	0.022*** (0.004)	0.021*** (0.005)
Log. GDP per capita t-1	0.026* (0.015)	0.009 (0.023)	0.021 (0.019)	0.028*** (0.010)	0.027** (0.012)
Log population t-1	-0.029** (0.011)	-0.015 (0.010)	-0.027 (0.021)	-0.018** (0.007)	-0.013* (0.008)
Log Oil and gas value t-1	-0.006 (0.006)	0.007 (0.009)	0.011 (0.016)	-0.000 (0.004)	0.001 (0.004)
non-colonial	-0.049 (0.044)	0.057 (0.046)	0.008 (0.046)	0.015 (0.025)	-0.003 (0.034)
Slave importation	-0.108 (0.108)	0.022 (0.094)	0.131 (0.200)	-0.043 (0.082)	-0.062 (0.085)
Constant	1.262*** (0.370)	1.008* (0.549)	1.028 (0.735)	0.598*** (0.147)	0.548*** (0.142)
Observations	1,865	1,729	1,729	2,754	2,754
R-squared	0.603	0.633	0.491	0.728	0.730
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	14.50***	3.76	0.81	9.40***	3.31*
Kleibergen-Paap rk LM statistic	179.54***	34.85*	11.16	258.43***	58.73***

Robust standard errors in parentheses

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

<sup>8</sup> Because of space and since the first-stage statistics don't vary much from the previous section the first stage statistics are not shown, but can be shown on request



Compared to the tables in previous section, only the Gini Coefficient shows a negative significant effect on physical integrity rights. The result is significant at the 10 percent level. None of the other variables are significant. Looking at the postestimation analysis, the F-test for the Gini coefficient is still over 10. The Kleibergen–Paap LM test statistics are also significant at the one percent in all the models except from model two and three, which mean I can reject the hypothesis that the instrument wheat sugarcane ratio is weak.

I move to table nine where I look at Farris Latent mean of human rights protection scores of human rights protection scores instead of the physical integrity rights variable from V-Dem. Other than the analysis is the same as in the previous analysis

**Table 9 IV-regression using wheat sugarcane, with slave controls**

VARIABLES	Farris LM 1990-2013	Farris LM 1990-2006	Farris LM 1990-2006	Farris LM 1990-2013	Farris LM 1990-2013
Gini	-0.056** (0.025)				
Log. Exclusion of ethnic group t-1		0.225 (0.267)			
Log. Largest ethnic group t-1			0.265 (0.436)		
Power distributed by social group t-1				0.326* (0.194)	
Power distributed by social class t-1					0.688 (0.452)
Civil war t-1	-0.882*** (0.164)	-0.974*** (0.218)	-1.123** (0.477)	-0.676*** (0.157)	-0.926*** (0.144)
Years of peace t-1	0.008*** (0.003)	0.013*** (0.005)	0.017 (0.011)	0.008** (0.003)	0.003 (0.006)
Regime type t-1	0.050*** (0.012)	0.070*** (0.025)	0.061** (0.026)	0.019 (0.021)	0.011 (0.029)
Log. GDP per capita t-1	0.247*** (0.084)	0.163 (0.128)	0.213 (0.145)	0.264*** (0.067)	0.246*** (0.073)
Log population t-1	-0.320*** (0.050)	-0.306*** (0.049)	-0.372*** (0.131)	-0.313*** (0.036)	-0.268*** (0.043)
Log Oil and gas value t-1	-0.017 (0.031)	0.067 (0.049)	0.093 (0.105)	0.030 (0.024)	0.036 (0.025)
non-colonial	-0.299 (0.281)	0.378 (0.250)	0.147 (0.294)	0.087 (0.156)	-0.043 (0.216)
Slave importation	-1.230*** (0.462)	-0.446 (0.408)	0.174 (1.238)	-0.674 (0.491)	-0.831** (0.361)
Constant	5.904*** (1.701)	4.952 (3.105)	5.207 (4.815)	2.635*** (0.736)	2.076** (0.857)
Observations	1,706	1,700	1,700	2,487	2,487
R-squared	0.691	0.589	0.330	0.759	0.706
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	14.73***	3.66	0.75	9.45***	3.40*
Kleibergen-Paap rk LM statistic	171.06***	33.36*	10.24	240.19***	55.43***

Robust standard errors in parentheses

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

Compared to the previous table, the results are similar, although there are one more variable that is significant. In model one, table nine, the Gini coefficient still show a significant nega-

tive effect on physical integrity rights, meaning higher inequality, the less are physical integrity rights respected. The result is significant at the five percent level. In model three, table nine, equality in terms of social group shows a positive significant effect, meaning the more equality in power distribution between social groups, the more are physical integrity rights respected. The result is significant at the 10 percent level. An interesting finding is that slave importation shows a highly significant negative effect on physical integrity rights when I use either the Gini coefficient or power distributed by social class as independent variables. This may indicate slave importation may in itself matter for state repression.

Examining the post-estimation test, the F-test for Gini is 14,73 which is still above 10. The variable measuring power distributed by social group has the F-value 9.45 although not over 10, it is just right under, which indicates that the instrument is not weak in predicting inequality in terms of power distribution. When looking at the Kleibergen–Paap statistics, they reject the null hypothesis that the instrument is weak at the 1 percent level.

I move further to the IV-regressions using artificial borders instead as the instrument, but with the same independent variables and controls from the previous analysis. None of the variables for inequality show a significant effect on physical integrity rights, either when using the one from V-Dem or the one developed by Fariss (2014). The postestimation results also don't show good predictions. All F-tests are under 7, indicating that the instrument for artificial borders is a weak instrument in predicting inequality.

**Table 10 Artificial borders with slave importation With PIR**

VARIABLES	PIR 1990-2015	PIR 1990-2006	PIR 1990-2006	PIR 1990-2015	PIR 1990-2015
Gini	-0.007 (0.011)				
Log. Exclusion of ethnic group t-1		-0.135 (0.285)			
Log. Largest ethnic group t-1			-0.113 (0.304)		
Power distributed by social group t-1				0.056 (0.055)	
Power distributed by social class t-1					0.243 (0.361)
Civil war t-1	-0.085*** (0.030)	0.045 (0.301)	0.066 (0.431)	-0.068** (0.029)	-0.147 (0.093)
Years of peace t-1	0.002*** (0.001)	0.002 (0.002)	-0.000 (0.006)	0.001* (0.001)	-0.000 (0.003)
Regime type t-1	0.024*** (0.004)	0.012 (0.024)	0.014 (0.025)	0.018*** (0.006)	0.008 (0.023)
Log. GDP per capita t-1	0.029** (0.013)	0.101 (0.140)	0.084 (0.132)	0.029*** (0.010)	0.019 (0.031)
Log population t-1	-0.027 (0.017)	-0.005 (0.033)	0.030 (0.131)	-0.017 (0.010)	-0.011 (0.015)
Log Oil and gas value t-1	-0.010 (0.007)	-0.015 (0.022)	-0.020 (0.040)	-0.004 (0.005)	-0.000 (0.011)
non-colonial	-0.052 (0.115)	-0.075 (0.262)	0.058 (0.092)	0.044 (0.027)	-0.006 (0.080)
Slave importation	-0.070 (0.247)	0.157 (0.163)	-0.116 (0.628)	0.072 (0.104)	-0.075 (0.269)
Constant	1.168 (0.826)	-1.397 (4.095)	-1.269 (4.890)	0.609*** (0.182)	0.677* (0.369)
Observations	1,756	1,790	1,790	2,830	2,830
R-squared	0.632			0.697	0.330

Robust standard errors in parentheses

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

**Table 11: Artificial borders with slave importation Latent mean**

VARIABLES	Farris LM 1990-2013	Farris LM 1990-2006	Farris LM 1990-2006	Farris LM 1990-2013	Farris LM 1990-2013
Gini	-0.056** (0.025)				
Log. Exclusion of ethnic group t-1		0.225 (0.267)			
Log. Largest ethnic group t-1			0.265 (0.436)		
Power distributed by social group t-1				0.326* (0.194)	
Power distributed by social class t-1					0.688 (0.452)
Civil war t-1	-0.882*** (0.164)	-0.974*** (0.218)	-1.123** (0.477)	-0.676*** (0.157)	-0.926*** (0.144)
Years of peace t-1	0.008*** (0.003)	0.013*** (0.005)	0.017 (0.011)	0.008** (0.003)	0.003 (0.006)
Regime type t-1	0.050*** (0.012)	0.070*** (0.025)	0.061** (0.026)	0.019 (0.021)	0.011 (0.029)
Log. GDP per capita t-1	0.247*** (0.084)	0.163 (0.128)	0.213 (0.145)	0.264*** (0.067)	0.246*** (0.073)
Log population t-1	-0.320*** (0.050)	-0.306*** (0.049)	-0.372*** (0.131)	-0.313*** (0.036)	-0.268*** (0.043)
Log Oil and gas value t-1	-0.017 (0.031)	0.067 (0.049)	0.093 (0.105)	0.030 (0.024)	0.036 (0.025)
non-colonial	-0.299 (0.281)	0.378 (0.250)	0.147 (0.294)	0.087 (0.156)	-0.043 (0.216)
Slave importation	-1.230*** (0.462)	-0.446 (0.408)	0.174 (1.238)	-0.674 (0.491)	-0.831** (0.361)
Constant	5.904*** (1.701)	4.952 (3.105)	5.207 (4.815)	2.635*** (0.736)	2.076** (0.857)
Observations	1,706	1,700	1,700	2,487	2,487
R-squared	0.691	0.589	0.330	0.759	0.706
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	14.73***	3.66	0.75	9.45***	3.40*
Kleibergen-Paap rk LM statistic	171.06***	33.36*	10.24	240.19***	55.43***

Robust standard errors in parentheses

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

I move further to second robustness check, concerning colonial legal origin, where I include dummies for French and British legal origin to control for the theory of Whucerpennig et.al(2016). I also control for importation of slave labor. I. The results concerning wheat-sugarcane in table four and table five in the previous section, change greatly in table 12 and 13.

In table 13 with Latent mean of human rights protections scores, only the Gini stayed significant. The change in the other variables might be because that the number of countries drop from 111 to 93 countries. When sample size is already is small, a drop of this size might give biased results. Interestingly also here do slave importation show a highly significant negative effect on physical integrity rights when using either the Gini Coefficient or power distributed by social class. The F-tests and the Kleibergen–Paap tests are consistent with the previous tables.

**Table 12: French legal origin on PIR Wheat sugarcane**

VARIABLES	PIR 1990-2015	PIR 1990-2006	PIR 1990-2006	PIR 1990-2015	PIR 1990-2015
Gini	-0.005 (0.003)				
Log. Exclusion of ethnic group t-1		0.106 (0.189)			
Log. Largest ethnic group t-1			0.032 (0.044)		
Power distributed by social group t-1				0.043 (0.054)	
Power distributed by social class t-1					0.043 (0.057)
Civil war t-1	-0.077** (0.034)	-0.146 (0.101)	-0.133** (0.057)	-0.068** (0.034)	-0.091*** (0.030)
Years of peace t-1	0.001** (0.000)	0.001 (0.001)	0.001 (0.001)	0.001* (0.001)	0.001 (0.001)
Regime type t-1	0.025*** (0.004)	0.039 (0.024)	0.029*** (0.005)	0.021*** (0.005)	0.023*** (0.004)
Log. GDP per capita t-1	0.030* (0.015)	0.004 (0.066)	0.032* (0.018)	0.033** (0.014)	0.035*** (0.012)
Log population t-1	-0.041*** (0.010)	-0.013 (0.020)	-0.026 (0.017)	-0.023*** (0.007)	-0.020*** (0.008)
Log Oil and gas value t-1	0.000 (0.005)	0.015 (0.026)	0.009 (0.013)	0.001 (0.004)	0.001 (0.004)
British legal origin	0.054 (0.046)	-0.059 (0.187)	-0.008 (0.084)	0.044 (0.039)	0.043 (0.041)
French legal origin	0.017 (0.040)	-0.049 (0.138)	-0.004 (0.059)	0.015 (0.033)	0.009 (0.037)
Slave trade	-0.099 (0.082)	0.095 (0.169)	0.123 (0.167)	-0.045 (0.080)	-0.044 (0.084)
Constant	1.228*** (0.330)	1.553 (1.924)	0.823 (0.544)	0.642*** (0.185)	0.573*** (0.144)
Observations	1,561	1,459	1,459	2,331	2,331
R-squared	0.664	0.168	0.642	0.745	0.743
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes

First-stage F-statistics	27.37***	0.6	1.49	4.57**	7.37 ***
Kleibergen-Paap rk LM statistic	347.74***	3.48*	17.63*	131.94 ***	136.76***

**Table 13 Dep: Farris Latent mean, with Wheat sugarcane with French legal origin as control**

VARIABLES	Farris LM 1990-2013	Farris LM 1990-2006	Farris LM 1990-2006	Farris LM 1990-2013	Farris LM 1990-2013
Gini	-0.024* (0.013)				
Log. Exclusion of ethnic group t-1		0.539 (0.804)			
Log. Largest ethnic group t-1			0.191 (0.261)		
Power distributed by social group t-1				0.335 (0.232)	
Power distributed by social class t-1					0.371 (0.253)
Civil war t-1	-1.018*** (0.187)	-1.208** (0.517)	-1.140*** (0.293)	-0.829*** (0.157)	-0.990*** (0.139)
Years of peace t-1	0.006* (0.003)	0.011 (0.008)	0.013 (0.008)	0.007** (0.003)	0.005 (0.003)
Regime type t-1	0.051*** (0.011)	0.122 (0.105)	0.070** (0.030)	0.028 (0.022)	0.038** (0.016)
Log. GDP per capita t-1	0.258*** (0.086)	0.102 (0.298)	0.229* (0.139)	0.252*** (0.074)	0.260*** (0.066)
Log population t-1	-0.333*** (0.040)	-0.282*** (0.090)	-0.353*** (0.082)	-0.317*** (0.036)	-0.285*** (0.035)
Log Oil and gas value t-1	0.025 (0.025)	0.119 (0.125)	0.093 (0.081)	0.043 (0.027)	0.042* (0.025)
British legal origin	-0.019 (0.156)	-0.564 (0.815)	-0.325 (0.434)	-0.136 (0.190)	-0.135 (0.169)
French legal origin	-0.028 (0.165)	-0.461 (0.568)	-0.252 (0.336)	-0.159 (0.177)	-0.217 (0.181)
Slave trade	-1.272*** (0.301)	-0.097 (0.753)	0.154 (0.978)	-0.666 (0.493)	-0.659* (0.341)
Constant	4.370*** (1.352)	7.719 (8.198)	4.321 (3.112)	2.862*** (0.902)	2.286*** (0.672)
Observations	1,437	1,446	1,446	2,121	2,121
R-squared	0.748	0.025	0.537	0.772	0.790
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	25.46***	0.67	1.18	5.69**	7.16 ***
Kleibergen-Paap rk LM statistic	306.99***	34.85*	14.02	149.82 ***	123.44***

Moving further, another objection to the results from the previous section could be raised in terms of repression. Some may argue that the connection to wheat and sugarcane production and repression might be due to lack of fair economic institutions other than those related to inequality, in addition to the lack of integration in the international market. Many post-colonial states are authoritarian which is often linked less integration in the international market, and less fair economic institutions, which is also often related to a repressive regime. Inequality is then more of a by-product, rather than an independent cause for a repressive regime. To control for this, I do a sensitivity analysis where I do the same analysis as before but this time controlling for economic freedom. The results stay significant. Actually, they get a better p-value and the variable for power distributed by social class becomes significant (See appendix 7.5).

I also do a robust test where I do an analysis non-interpolated version of Gini. When looking at the physical integrity rights measure from V-Dem, the result becomes non-significant. This is probably due to the drop in the number of observations which goes from 1881 to 973. Still even with a similar drop when I look at the Latent mean of human rights protections scores, the result stays significant at the one percent level. The results on Gini is then still robust. Because of space this result is not shown.

Further I do a IV-probit analysis on PTS, where I recode PTS to a dummy variable (See appendix 7.6). I code the scores three to five to be coded as one and one to two as zero. The reason for this logic is that the categorization of the PTS seems to be very sensitive to sudden changes as discussed in the method section but also due to the different scores of Amnesty International, US state department and Human rights watch. For the high scores, they seem to disagree on the differentiation between three and four. A country with a score of three, may then have bad human rights practice even if not captured in the measure. For category two, which stands for low repression, I code this as a zero due to the variables' sensitivity. If one examine the PTS scores for each country year by year, one will see that even managed to get repression score of two in 2002. Since the wheat-sugarcane variable is a time-invariant variable, country fixed effects are not possible. Therefore I do a simple IV probit model with time fixed effects and standard errors clustered around the country codes. After doing an IV-probit analysis with the PTS-dummy the results stay robust.



I do another robustness test where I test the wheat-sugarcane instrument on five other inequality measures to see if I get the same indications (see appendix 7.7). I then run two separate tables with the physical integrity rights index and the Farris Latent mean of human rights protection scores of human rights protection scores. I look at a brand-new measure on vertical economic inequality from V-Dem which looks at equality in terms of resources. Instead of just accounting for income inequality it accounts for resources in terms of food, water, housing, education and healthcare. I also test to separate measures on health inequality and educational equality, to see if the hypothesis holds, when I look at these types of equality separately. Finally, I include two variables that measure equality in terms of civil liberty. One in terms of social class and another one in terms of social groups. These two variables capture other aspects of political equality, that also may affect the level of repression. The results are similar to the ones in the previous section and the results stay robust.

The last robustness check is to change the polity measure for democracy with the electoral democracy index from V-Dem (see appendix 7.8). I then do the same IV analyses on wheat sugarcane as the ones in the main section with the V-Dem measure as a control instead of the one from polity. The polity measure has been criticized by some scholars commenting that although it captures institutional factors, the measure also captures a factional category that includes political competition under hostile and violent conditions, and the existence of rival governments (Gurr, 1989; Vreeland, 2008). These are factors that are highly associated with state instability, which again may affect the level of repression. The measure from V-Dem excludes these factors and may therefore also influence the analysis in a different way than the one from polity. Using the Electoral Democracy Index as a control, the regular regression analyses do not change much, although the exclusion of discriminated groups and largest discriminated group show both significant results in the regular OLS. In the first Instrumental variable regressions with the physical integrity rights index from V-Dem the variables, the results change greatly. None of the IV-regressions show a significant relationship between inequality and physical integrity rights, thereby showing inconsistencies with my original results. In the IV-regression with Farris Latent mean of human rights protection scores variable, the results do not change. The result stays significant and the direction of the effect stays the same.

To sum up, the results stay fairly robust after the sensitivity analysis. The results are consistent with previous theoretical and empirical literature done by Landman (2007) Acemoglu

and Robinson (2012) and Kauffman and Haggard (2015). The change in the results concerning the physical integrity rights from V-Dem might show that this type of repression is harder to measure when it comes to inequality. A reason for this is as mentioned in method section, that the repression variable from V-Dem captures mostly the most serious and most violent forms of repression, while the Latent mean of human rights protection scores and PTS capture milder forms of repression as disappearances and torture. Carey (2009) have found that especially in semi autocracies or semi democracies, dictators are more reluctant in using the most violent forms of repression, because they are easier to detect, and the leaders often experience more dissent from its population. Therefore, they choose other forms of repression that is not as visible as the most violent forms. This might explain why s both Latent mean of human rights protection scores analyses and the IV-Probit model show significant results regarding inequality and repression, but PIR does not. The V-Dem democracy index might be better at isolating forms of democracy than polity, and regime type might affect which type of repression strategy a regime decides to use (Carey, 2009)

## 5.0 Conclusion

The previous discussion on economic inequality shows that inequality is likely to affect human rights practices (Collier,2010; Cederman et.al,2011). Reflecting back on the mechanisms of inequality in terms of grievance and institutions, the results indicate that there is a possible relationship between at least structural inequality and physical integrity rights violations. There are still other factors that needs to be accounted for in future research, like how market-based inequality may affect repression. However, this is a step forward in identifying the possible negative effects inequality may have on repression. In light of the grievance-based mechanism inequality might often seem immoral and unfair which can create a feeling of injustice, thereby inducing grievance (Buhaug et.al,2014). Also, when assessing our estimates for state repression, we see how inequality creates possible domestic threats that make a regime turn to repressive strategies (Poe et.al,1999). Seen in the light of the institutional-based mechanism the results also indicate that also historical structures also may be at play in determining inequality and repression. Inequality created today might not affect the level of repression, but inequality created almost 200 years ago may affect repression today.

The findings of this study are quite interesting. Through using an ordered probit regression analysis and an OLS regression analysis, this paper shows empirical support for that there is

significant relationship between inequality and repression, when focusing on substantive effects. This hypothesis states that inequality has a positive effect on the level of state repression. In the “naïve” regressions in table one, two and three, the results of the Gini coefficient and the V-Dem measures of Inequality are fairly consistent and stay highly significant in relation to repression. Interestingly, I find out when doing a granger causality-test on the V-Dem measure of PIR, that neither inequality nor repression granger causes one way nor the other. The instrumental variable analyses showed that vertical inequality was consistently linked with repression, in line with previous studies on inequality and weak institutions (East-erly,2006; Acemoglu and Robinson,2012). The results of HI were mixed. The horizontal measures of exclusion of ethnic groups and the largest discriminated group changed from a negative to a positive effect on physical integrity rights and became insignificant when I used either the wheat sugarcane ratio or artificial borders as instruments. The horizontal equality measure of power distributed among social groups kept the same sign as in the regular OLS and stayed significant in both of the IV-regressions when using the wheat-sugarcane index. This measure did also stay fairly robust in the sensitivity analysis when using the latent mean of protections scores as the dependent variable. It did not stay significant in the sensitivity analyses when I used the physical integrity rights index from V-Dem.. The mixed results might be a result of that the instrument was developed mainly for VI and therefore does not predict HI as well, which some of the F-tests indicated in the sensitivity analysis. (East-erly,2006). The wheat-sugar ratio-variable does also not consider the difference in institutions from the different colonial powers, which Wuchperfennig et.al (2016) showed to influence the extent to which ethnic groups were represented in the government. However, this does not seem to matter greatly at least for the Gini Coefficient that stayed significant in relation to repression when controlling for this aspect in the sensitivity analysis. The other inequality variables did not stay significant, but as discussed in the previous section, this might be due to the significant drop in country clusters. Another reason for the mixed results might be because of an unknown factor that explains the relationship between the W-S index, inequality and repression. In the last sensitivity analysis, I used another measure on democracy instead of Polity, where the results changed greatly when using the physical integrity rights index dependent, but not when using the latent mean of protection scores as dependent. This might be an argument for this interpretation, although it might also be related to how the physical integrity rights index is operationalized.

It is important to bear in mind that the models used in this paper are conservative and use a combination of country-fixed effects, clustered robust standard errors and IV-regression analyses. Although my findings are mixed, the substantive results may show relevancy for a policy discussion on two grounds. Firstly, it suggests that the negative effects of inequality are also relevant in the human rights discussion. This supports the notion that state leaders and ideal organizations should focus more on inequality reduction in addition to poverty reduction (UNDP,2014). Acemoglu and Robinson (2012) raise the issue of why focusing only on international trade and economic growth especially in authoritarian states is the wrong perspective. Growth without focusing on more equal institutions keeps the authoritarian leaders in power and legitimizes their extraction of other people's resources. As we have seen in this study, it also brings less peace to the population. Secondly, related to the previous argument, the findings indicate the importance of inclusive institutions. As previous studies have found that inclusive institutions are important for economic growth; my findings indicate that inclusive institutions are also important in reducing state repression (Engermann and Sokoloff 2002). The inequality measures showed a positive effect, and the equality measures showed a negative effect on the level of state repression. High inequality is often related to the lack of inclusive institutions, which again may cause unstable economic growth and state instability (Berg and Ostry,2011; Acemoglu and Robinson,2013, Stewart,2017). Countries that lack inclusive institutions tend to favor social or ethnic groups over talents, thereby losing out on important innovations and creative destruction, which again may affect countries' further development (Acemoglu and Robinson, 2013).

The results of this analysis point out three important action points. The UN Sustainable goals have three sub goals in relation to inequality that are relevant for this paper. 1) is "to sustain growth for the bottom 40 percent of the population at a rate higher than the national average" (UN 2019). This is in relation to the results regarding the Gini coefficient, which showed to be one of the strongest and most robust results in the analysis. High-income inequality is not the only reason for repression or other injustices, but as discussed in previous literature, according to the Engermann and Sokoloff-hypothesis and the study by Easterly (2007), high Gini can be a symptom of unfair institutions (Engermann and Sokoloff 2002, Acemoglu and Robinson 2013, Whucerpennig et.al 2016). Institutions that favor redistribution either directly or indirectly through public services are then important. The second sub-goal is to "empower and promote social, economic and political inclusion for all."(UN) which is related to the results

concerning power distribution by either social class or social group, and the results concerning access to public services. As some scholars put, this type of policy should be implemented with some caution. Some have argued, for example, that these kinds of policies can be implemented through foreign aid, and result in aid conditionality. This means that the recipients of aid becomes reliant on it and then uses the money to sustain development and not spurring further development. Acemoglu and Robinson (2012, p455) point out that these kinds of practices don't work and a better way may be "structuring foreign aid so that its use and administration bring groups and leaders otherwise excluded from power into decision-making process and empowering a broad segment of population might be a better prospect". They argue that this should be the starting point as inequality in regard to public services is often more of a symptom of unequal power distribution. Whucerpennig et.al (2016) points to problems of forcing countries to adopt more equal institutions regarding power-sharing, because in some cases it may lead to infighting. Still, they conclude that "policymakers are thus well advised to go the extra mile toward finding inclusive compromises that allow potential present or past conflict parties to share power" (Whucerpennig et.al 2016, p896). This is in line with the arguments of Acemoglu and Robinson (2012) and is a perspective shared in this article. The perspective is that reduction in political inequalities may have a peace-inducing effect on inhabitants. The third subgoal is to "ensure equality of opportunity and reduce inequalities of outcome and eliminating discriminatory laws, policies, and practices" (UN). This goal is tightly linked to the second subgoal since discriminatory laws are often linked to the issue of political inequalities. However, discriminatory laws are often linked to a repressive practice as one could see in South Africa and the postcolonial southern state of USA. Therefore inequality before the law is important to reduce, but may be difficult to reduce before one reduces inequalities in power distribution (Acemoglu and Robinson 2006, Acemoglu and Robinson 2012, Engermann and Sokoloff 2002, Nunn 2007)

To sum up, the empirical results of this paper, although mixed, indicate that inequality does matter for state repression. My study has primarily been looking at country level data, and for future studies, it might be useful to look at the same issue on a group level and subnational level. This because group level data will give room for other instrumental variables, like looking at the association between the colonial power and the level of repression as done by Wuchperfennig et.al (2016), only that they are studying conflict. Also, an analysis on the group level might capture other things that are not possible on a country level, which might be

well as important as the factors on the country level. Lastly, future studies should explore in more detail why my results differ when using the democracy index from V-Dem instead of the one from Polity. Although one may argue that the one from V-Dem is better at isolating the effect on repression than Polity, the results might also be a result of that polity might capture unintentionally and omitted and unexplained variable, that might be important in future research on repression (Vreeland, 2008). Still, with the change polity to V-Dem, the IV-regressions with the latent mean of human rights protections scores and the PTS s remained significant. Also, after doing several sensitivity analysis the results stay remarkably robust, especially in terms of the Gini-coefficient. This make it seem very likely that there is causal relationship between inequality and repression, indicating that inequality should be a primary concern for future policymakers.

## 6.0 Literature

- Acemoglu, D, and Robinson, J (2006) *Economic origins of dictatorships and democracy*, Cambridge university press
- Acemoglu, D and Robinson, J (2013) *Why nations fail: the origins of power, prosperity and poverty* Profile book LTD
- Achen, C. (2000) Why Lagged Variables Can Suppress the Explanatory Power of Other Independent Variables, *American political science association*, pp 1-42
- Alesina A, Perotti R. (1994) The political economy of growth: a critical survey of the recent literature. *World Bank Economic Review*. 8: pp351–71.
- Alesina, A., Di Tella, R., MacCulloch, R., (2004). "Inequality and happiness: Are Europeans and Americans different?". *Journal of Public Economics*, 88: pp 2009-2042,
- Alesina, A. and Ferrarra, E.L. (2005) Ethnic diversity and Economic performance. *Journal of economic literature* 43(3): pp 762-800
- Alesina, A., Easterly, W., and Matuszeski, J., (2011) Artificial states, *Journal of the European Economic Association*, 9(2): pp 246-277
- Angrist, JD., and Pischke, JS. (2008) *Mostly Harmless Econometrics – An Empiricist's Companion*, Princeton university press
- Ansells, B., and Samuels, D. (2010) Inequality and democratization: A contractarian approach, *Comparative Political Studies* 43(12): pp 1543-1574
- Beck, N. and Katz, JN. (1995) What to do (and not to do) with time-series cross-section data, *American political science review*, 89(3): pp 634-647
- Berg AG and Ostry JD. (2011) Equality and efficiency: is there a trade-off between the two or do they go hand in hand? *American Economic Review*. 2011;84: pp 600–21.
- Besley and Person (2009) Repression or Civil War? *American economic review*, 99 (2): pp. 292-297.
- Besley and Persson (2011) *Pillars of Prosperity: The Political Economics of Development Clusters*, Princeton university press
- Boix, C. (2008) Economic Roots of Civil Wars and Revolutions in the Contemporary World, *World Politics*, 60(3): pp 390-437
- Bueno de Mesquita, B and Smith A. (2012) *Great dictators handbook: Why Bad Behavior is Almost Always Good Politics*, Public affairs

- Burkhart, R.E and Beck, MSL (1994) Comparative Democracy: the Economic Development Thesis, *American political science review*, 88(4): pp 903-910
- Cameron A.C. and Trivedi PK. (2009) *Mircroeconometrics using stata*, State Press
- Carey, SC., (2009) *Protest, repression and political regimes – An empirical analysis of Latin America and Sub-Saharan Africa*, Routledge
- Cederman LE, Weidmann NB and Gleditsch KS. (2011) Horizontal inequalities and ethno-nationalist civil war: a global comparison. *American Political Science Review* 105(3): pp 478–95.
- Chenoweth, E, and Unfelder, J. (2017) Can Structural Conditions Explain the Onset of Nonviolent Uprisings? *Journal of Conflict Resolution*, Vol. 61(2); pp 298-324
- Collier, P. (2001) Implications of Ethnic diversity, *economic policy* 16(32): pp 127-166
- Collier, P, and Hoeffler, A. (2004) Greed and Grievance in Civil War. *Oxford Economic Papers* 56(4); pp 563–595.
- Collier, P, Hoeffler and A., Rohner, D. (2008) Beyond greed and grievance: feasibility and civil war, *Oxford Economic Papers* 61: pp 1–27
- Collier (2010) *Wars, Guns and Votes – Democracy in dangerous places*, Vintage
- Davenport, C., (2007) State Repression and Political Order, *Annual Review of Political Science*, 10(1-23): pp 1-23
- Davies, J.C. (1962). "Toward a Theory of Revolution." *American Sociological Review* 6 (1): pp 5-19.
- De Soysa, I. and Nordås, R. (2007) Islam's Bloody Innards? Religion and Political Terror, 1980–2000, *International Studies Quarterly*, 51: pp 927-943
- Driscoll, J. C., and A. C. Kraay. 1998. Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data. *Review of Economics and Statistics* 80: 549–560.
- Eichler, M., (2012). "Causal Inference in Time Series Analysis". In Berzuini, Carlo. *Causality : statistical perspectives and applications* (3rd ed.). Hoboken, N.J.: Wiley. pp. 327–352.
- Engermann, SL., Sokoloff., (2002) Factor Endowments, inequality and paths of development, *Economia*, 3(1); pp41-88
- Esteban, J and D Ray, (2008). 'Polarization, Fractionalization and Conflict', *Journal of Peace Research* 45(2): pp 163—182
- Fariss CJ, (2014) Respect of Human Rights has improved over time: modelling the changing standard of accountability, *American political science association*, 108(2), pp297-318



- Fearon, J. D., and Laitin, D.D. (2003). "Ethnicity, Insurgency, and Civil War." *American Political Science Review* 97 (1): 75-90.
- Gartner, S. S., and Regan, P.M. (1996) Threat and Repression: The Non-Linear Relationship Between Government and Opposition Violence. *Journal of Peace Research* 33(3): pp 273–287.
- Gastil, R. (1980) *Freedom in the World: Political Rights and Civil Liberties*. New Brunswick, NJ: Transaction Books.
- Gastwirth, J.L., (2017) Is the Gini Index of Inequality Overly Sensitive to Changes in the Middle of the Income Distribution?, *Statistics and Public Policy*, 4(1); pp1-11
- Gerring, J (2016) *Power distributed by socioeconomic position* ““V-Dem Codebook v7.” Varieties of Democracy (V-Dem) Project.
- Gerring J, (2016) *Power distributed by social group V-Dem dataset* “V-Dem Codebook v7.” Varieties of Democracy (V-Dem) Project.
- Gibney, M., Cornett, L. Wood, R. Haschke, P. and Arnon, D. 2016. *The Political Terror Scale 1976-2015*. Date Retrieved, from the Political Terror Scale website: <http://www.politicalterror.org>
- Gimpelson, V., and Treisman, D (2017) Misperceiving Inequality, *Economics and politics* 30(1): pp27-54
- Girard (2018) on't Touch My Road. Evidence from India on Affirmative Action and Everyday Discrimination. *World Development* 103, pp 1–13
- Gleditsch, N. P. Wallensteen, P. Eriksson, M. Sollenberg, M. and Strand, H. (2002). “Armed Conflict 1946–2001: A New Dataset.” *Journal of Peace Research* 39: pp 615–637.
- Goldstone, Jack A. 2014. *Revolutions: A Very Short Introduction*, New York: Oxford University Press.
- Granger, C. W. J. (1969). "Investigating Causal Relations by Econometric Models and Cross-spectral Methods". *Econometrica*. 37 (3): 424–438
- Granger, Clive W. J (2004). "Time Series Analysis, Cointegration, and Applications". *American Economic Review*. 94 (3): 421–425.
- Gurr, T.R., (1968) Psychological factors in civil violence, *World politics*, 20; pp245-278
- Gurr, T. R. (1970). *Why Men Rebel*. Princeton, NJ: Princeton University Press.
- Gurr, T. R, and Raymond Duvall. R. (1973). "Civil Conflict in the 1960s: A Reciprocal System with Parameter Estimates." *Comparative Political Studies* 6 (2): 135-69
- Gurr, T. R. (1986) *The Political Origins of State Violence and Terror: A Theoretical*

- Analysis. In *Government Violence and Repression: An Agenda for Research*, edited by Stohl, M. and G. A. Lopez. New York: Greenwood.
- Gurr (1993), *Minorities at Risk: A Global View of Ethnopolitical Conflicts*. Washington, DC: United states institute peace press
- Hafner-Burton, E. M. (2005) Right or Robust? The Sensitive Nature of Repression to Globalization. *Journal of Peace Research* 42(6): pp 679–698.
- Hirschman, A.O. and Rothschild, M. (1973) The changing tolerance of income inequality and the course of economic development, *The Quarterly Journal of Economics*, 87(4), pp544-566
- Hoechle, D (2008) Robust Standard Errors for Panel Regressions with Cross-Sectional Dependence, *The stata journal*, pp 1-31
- Houle, C., (2015) Ethnic inequality and the dismantling of Democracy: A global analysis, *World politics* 67(3) pp1-37
- Huber, P. J. 1967. The behavior of maximum likelihood estimates under non-standard conditions. In *Proceedings of the Fifth Berkeley Symposium in Mathematical Statistics and Probability*, vol. 1, 221–233. Berkeley, CA: University of California Press.
- Haggard, S., and Kauffmann R.R (2016) *Dictators and Democrats – Masses, elites, and regime change*, Princeton University press
- Keele, L. Kelly, N. (2005) Dynamic Models for Dynamic Theories: The ins and Outs of Lagged Dependent Variables, *Political analysis*, 14(2); pp 186-205
- Kellsted, PM., and Whitten, GD., (2013) *The fundamentals of political science research*, second edition Cambridge University press
- Laitin, D. D. (2007). *Nations, States, and Violence*. Oxford: Oxford University Press.
- Landman, T, Carvalho, E (2010) *Measuring Human rights*. Routledge
- Landman, T., and Larizza, M., (2009) Inequality and human rights: Who controls what, when, and how, *international studies quarterly*, 53: pp715-736
- Marshall, Jaggers and Gurr 2017. *Polity IV Project*, Center for Systemic Peace, data retrieved from; <http://www.systemicpeace.org/polityproject.html>
- Mccormick, J., and Mitchel, N. (1997) Human Rights Violations, Umbrella Concepts, and Empirical Analysis. *World Politics* 49(4):5 pp 510-525.
- Mehmetoglu, M. and Jakobsen, TG. (2016) *Applied Statistics Using Stata: A Guide for the Social Science*, Sage Publications ltd
- Miguel, Satyanath and Sergenti (2003), Economic Shocks and Civil Conflict: An Instrumental Variables Approach, *Journal of political economy*, 112(4); pp 725-753

- Midtbø, T., (2012) *Stata - En entusiastisk innføring*, Universitetsforlaget
- Miguel, E (2014) Tribe or Nation? Nation Building and Public Goods in Kenya versus Tanzania *World Politics* 56: pp 327-62
- Moore, W. H. (2000) The Repression of Dissent: A Substitution Model of Government Coercion. *Journal of Conflict Resolution* 44(1): pp 107–127. Peace Press.
- Muller and Seligson (1987) Inequality and Insurgency, *The American Political Science Review* 81(2); pp 425-452
- Newey, W. & West, K. (1987). A simple, positive, semi-definite, heteroskedasticity and autocorrelation consistent covariance Matrix. *Econometrica* 55; pp703–708
- Nunn, N.(2008) Slavery, Inequality, and economic development in the americas: an examination of the Engermann-Sokoloff hypothesis In: Helpman. E *Institutions and Economic Performance*. Cambridge: Harvard University Press; . pp. 148-180
- Pevehouse, JCW., and Vabulas, F., (2019) Nudging the Needle: Foreign lobbies and US human rights ratings, *International studies quarterly*, 63: pp85-98
- Poe, Tate and Keith (1999) Repression of the Human Right to Personal Integrity Revisited: A Global Cross-National Study Covering the Years 1976-1993 *International Studies Quarterly*, Vol. 43(2); pp 291-313
- Poe, S. C., Vazquez, T.C and Carey. S.C. (2001) How Are These Pictures Different? A Quantitative Comparison of the U.S. State Department and Amnesty International Human Rights Reports, 1976–1995. *Human Rights Quarterly* 23(3): 650–677.
- Poe, S. C. (2004) *The Decision to Repress: An Integrative Theoretical Approach to the Research on Human Rights and Repression*. In *Understanding Human Rights Violations: New Systematic Studies*, edited by Sabine C. Carey, and Steven C. Poe. Aldershot: Ashgate
- Poe, S.C. Rost, N. and Caray, S. (2006) Assessing risk and opportunity in conflict studies – A human right analysis. *Journal of conflict resolution*, 50(4): pp 484-507
- Regan, P. M., and Norton, D. (2005) "Greed, Grievance, and Mobilization in Civil Wars." *Journal of Conflict Resolution* 49 (3): pp 319-36.
- Ringdal, K., og Wiborg, Ø., (2017) *Lær deg Stata - Innføring i statistisk dataanalyse*
- Ringdal, K., (2018) *Enhet og Mangfold*, 4. utgave, Fagbokforlaget
- Ross, M. (2012). *The oil curse. How petroleum wealth shapes the development of nations*. Princeton: Princeton University Press
- Rørbæk, LL (2016) Ethnic exclusion and civil resistance campaigns: Opting for nonviolent or violent tactics? *Terrorism and Political Violence*: pp 1-19

- Rørbæk, LL., and Knutsen, AT., (2017) Maintaining ethnic dominance: Diversity, power and violent repression, *conflict management and peace science*, 34(6): pp 640-659
- Skaaning, (2016) *V-Dem dataset Physical violence index* “V-Dem Codebook v7.” Varieties of Democracy (V-Dem) Project.
- Skog, Ole-Jørgen (2004) *Å forklare sosiale fenomener - en regresjonsbasert tilnærming*, Gyldendal Akademisk
- Solt, F., (2015) Economic inequality and Nonviolent protest, *Social science quarterly*, 96(5) pp1315-1327
- Starmansm C., Sheskin, M., and Bloom (2017) Why people prefer unequal societies, *Nature human behavior*, 82(1) 1-7
- Stewart, F (2016) Changing Perspectives on Inequality and Development, *Studies in Comparative International Development*, 51: pp60–80
- Stohl, Michael, David Carleton, and Steven E. Johnson. (1984) Human Rights and U.S. Foreign Assistance from Nixon to Carter. *Journal of Peace Research* 3(1): pp 1–11
- Svolik, M.W, (2012) *The politics of Authoritarian rule*, Cambridge
- Strauss, S. (2004) How many perpetrators were there in the Rwandan genocide? An estimate, *Journal of Genocide Research*, 6(1), pp 85-98
- UNDP. [United Nations Development Programme]. *Human development report 2014*. Oxford: Oxford University Press; 2014.
- Vreeland, JR (2008) The Effect of Political Regime on Civil War - Unpacking Anocracy, *Journal of conflict resolution*, 52(3): pp401-425
- White, H, (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica*. 48 (4): 817–838.
- Wiggins, V. (1999) Comparing XTGLS with Regress Cluster. Stata Corporation. Available at [www.stata.com/support/faqs/stat/xtgls\\_rob.html](http://www.stata.com/support/faqs/stat/xtgls_rob.html). (Accessed 20<sup>th</sup> of November 2018).
- World Bank, 2016a. GDP per capita (constant 2010 US\$). Accessed 10.10.2018 <http://data.worldbank.org/indicator/NY.GDP.PCAP.KDWorldbank>
- World Bank 2016b. Oil rents (% of GDP). Accessed 10.10.2018 <http://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS>
- World bank, 2016c Population size. Accessed 10.10.2018
- Wucherpfennig, J., Hunziker P and Cederman L.E. (2015) *Who Inherits the State? Colonial Rule and Postcolonial Conflict*, *American journal of political science*, 60(4): pp 882-898

Thea Marie Thorkildsen  
Studentnummer 729734

Master  
Våren 2019

Østby, G, (2008) Polarization, Horizontal Inequalities and Violent Civil Conflict, *Journal of Peace Research*, 45(2): pp 143-1

## 7.0 Appendix

### 7.1. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Latent mean of protection scores	3,404	0.4070705	1.231937	-2.703088	3.949144
Physical integrity rights	2 218	-0.6947821	0.2428307	-0.9893019	-0.0910719
Political terror	1 931	2.640083	1.081847	1	5
Log GDP-Per capita	2 918	8.094453	1.448954	5.229296	11.42512
Log Population	2 918	16.36078	1.32714	13.36966	21.02882
Log Oil and gas value	2 778	-0.3190549	5.63533	-6.907755	9.927278
Log Ethnic group exclusion	2,192	-8.449435	2.031199	-9.21034	-0.0685424
Log Exclusion of largest	2,192	-7.111355	3.137016	-9.21034	-0.1641852
Gini- coefficient	2,226	40.7419	9.139381	16.2	64.8
Regime type (Polity)	2,916	2.747599	6.570954	-10	10
Regime type (Polyarchy	2 870	4.483318	5.650467	0.123524	0.9470936
civil war	2 919	0.1722272	0.377663	0	1
Years of Peace	2 919	28.50271	24.47307	0	69
Power distributed by social class	2 870	0.4425191	0.965627	-2.803946	3.043136
Power distributed by social group	2 870	0.6451418	1.146279	-2.638704	3.455256
Economic freedom	2 218	6.080619	1.302031	1.82	9.23
Wheat Sugar-ratio	2 218	0.1059255	0.2045626	-0.3926	0.5775

### 7.2. Countries included in the study

Afghanistan	Germany	Norway
Angola	Ghana	Pakistan
Albania	Greece	Peru
Algeria	Guinea	Philippines
Argentina	Guinea Bissau	Papua New Guinea
Australia	Guatemala	Panama
Austria	Guyana	Poland

Armenia	Honduras	Paraguay
Azerbaijan	Croatia	Qatar
Botswana	Haiti	Romania
Burundi	Hungary	Rwanda
Benin	Indonesia	Saudi Arabia
Burkina Faso	India	Senegal
Bangladesh	Iran, Islamic Republic of	Sierra Leone
Bulgaria	Iraq	Slovakia
Bosnia and Herzegovina	Ireland	Slovenia
Belarus	Israel	Solomon Islands
Belgium	Italy	Somalia
Bolivia, Plurinational State of	Jamaica	Spain
Brazil	Japan	Suriname
Bhutan	Jordan	Sudan
Canada	Kazakhstan	El Salvador
Central African republic	Kenya	Swaziland
Chile	Kyrgyzstan	Sweden
China	Cambodia	Switzerland
Cote d'Ivoire	Korea, Republic of	Chad
Cambodia	Lao People's Democratic Republic	Togo
Cameroon	Lithuania	Thailand
Comoros	Lebanon	Tajikistan
Congo	Liberia	Trinidad and Tobago
Colombia	Libya	Tunisia
Costa Rica	Sri Lanka	Turkey
Croatia	Lesotho	Tanzania, United Republic of
Cuba	Latvia	United Arab Emirates
Cyprus	Morocco	United Kingdom
Czech Republic	Moldova, Republic of	Uganda
Danmark	Mexico	Ukraine
Djibouti	Macedonia, the former Yugoslav Republic of	Uruguay
Dominican Republic	Mali	Uzbekistan
Ecuador	Mozambique	Venezuela, Bolivarian Republic of
Egypt	Mauritania	Vietnam
Eritrea	Mauritius	Yemen
Estonia	Madagascar	South Africa
Ethiopia	Mongolia	Congo, the Democratic Republic of the
Fiji	Malaysia	Zambia
Finland	Malawi	Zimbabwe
France	Namibia	Gambia
Gabon	Niger	Nepal
Gambia	Nigeria	
Georgia	Nicaragua	

### 7.3. Granger Causality

#### 7.3.1 GC- Three lags

a) *Ethnic Discriminated groups (EDG)*

EDG t-1 EDG t-2 EDG t-3 = F( 3, 161) = 1.68 Prob > F = 0.1742

PIR t-1 PIR t-2 PIR t-3 = F( 3, 161) = 0.68 Prob > F = 0.5642

b) *Largest discriminated group (LDG)*

LDG t-1, LDG t-2 LDG t-3 = F( 3, 161) = 1.23 Prob > F = 0.3001

PIR t-1 PIR t-2 PIR t-3 = F( 3, 161) = 0.94 Prob > F = 0.4227

c) *Gini*

Gini t-1 Gini t-2 Gini t-3 F( 3, 2321) = 1.34 Prob > F = 0.2583

PIR t-1 PIR t-2 PIR t-3 = F( 3, 2185) = 0.37 Prob > F = 0.7737

d) *Power distributed by group (PDG)*

PDG t-1 PDG t-2 PDG t-3 F( 3, 8295) = 12.70 Prob > F = 0.0000

PIR t-1 PIR t-2 PIR t-3 = F( 3, 8295) = 7.22 Prob > F = 0.0001

e) *Power distributed by Class (PDC)*

PDC t-1 PDC t-2 PDC t-3 = F( 3, 8295) = 6.10 Prob > F = 0.0004

PIR t-1 PIR t-2 PIR t-3 = F( 3, 8295) = 4.92 Prob > F = 0.0020

#### 7.3.2 GC – five lags

a) *Ethnic Discriminated groups (EDG)*

EDG t-1 EDG t-2 EDG t-3 = F( 5, 5814) = 0.52 Prob > F = 0.7651

PIR t-1 PIR t-2 PIR t-3 = F( 5, 5652) = 0.58 Prob > F = 0.7121

b) *Largest discriminated group (LDG)*

LDG t-1, LDG t-2 LDG t-3 LDG t-4 LDG t-5 = F( 5, 5835) = 0.41 Prob > F = 0.8431

PIR t-1 PIR t-2 PIR t-3 PIR t-4 PIR t-5 = F( 5, 5652) = 0.34 Prob > F = 0.8872

c) *Gini*

Gini t-1 Gini t-2 Gini t-3 Gini t-4 Gini t-5 = F( 5, 2045) = 1.99 Prob > F = 0.0765

PIR t-1 PIR t-2 PIR t-3 PIR t-4 PIR t-5 = F( 5, 1909) = 0.53 Prob > F = 0.7564

d) *Power distributed by group (PDG)*

PDG t-1 PDG t-2 PDG t-3 PDG t-4 PDG t-5 = F( 5, 7957) = 8.20 Prob > F = 0.0000

PIR t-1 PIR t-2 PIR t-3 PIR t-4 PIR t-5 = F( 5, 7957) = 6.04 Prob > F = 0.0000

e) *Power distributed by Class (PDC)*

PDC t-1 PDC t-2 PDC t-3 PDC t-4 PDC t-5 = F( 5, 7957) = 4.08 Prob > F = 0.0011



PIR t-1 PIR t-2 PIR t-3 PIR t-4 PIR t-5 = F( 5, 7957) = 3.99 Prob > F = 0.0013

### 7.4.1 First stage IV-regression with wheat sugarcane of Latent mean in table 5

VARIABLES	Gini	ETG	LDG	PDSG	PDSC
	1990-2013	1990-2006	1990-2006	1990-2013	1990-2013
Log. Wheat sugar	-23.45*** (4.403)	0.704 (0.607)	1.514 (1.446)	1.691*** (0.434)	0.877** (0.363)
Civil war t-1	-1.858 (1.564)	0.668 (0.467)	0.946 (0.645)	-0.283* (0.161)	0.213 (0.18)
Years of peac t-1	-0.0312 (0.0383)	-0.00498 (0.0117)	-0.0242 (0.0171)	0.00778** (0.00379)	0.0105*** (0.00348)
Regime type t-1	0.324** (0.161)	-0.0988** (0.0406)	-0.0327 (0.0489)	0.0941*** (0.0186)	0.0579*** (0.0152)
Log. GDP per capita t-1	0.0526 (0.834)	0.246 (0.18)	0.088 (0.292)	-0.0141 (0.0782)	0.0431 (0.0781)
Log population t-1	-0.0413 (0.763)	-0.000964 (0.0992)	0.282 (0.181)	0.0101 (0.0582)	-0.0684 (0.0472)
Oil and gas value t-1	-0.256 (0.355)	-0.132* (0.0684)	-0.166 (0.108)	0.00294 (0.0332)	-0.00664 (0.0313)
Constant	45.42*** (13.93)	10.06*** (1.568)	-11.93*** (3.276)	0.197 (1.118)	0.904 (0.95)
Observations	1,721	1,716	1,716	2,510	2,510

R-squared

Robust standard errors in parentheses

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

### 7.4.2 First stage IV regression with the fractal index for table 7

VARIABLES	Gini	ETG	LDG	PDSG	PDSC
	1990-2013	1990-2006	1990-2006	1990-2013	1990-2013
Log. Fractal index	-3.34 -13.29	10.85*** -4.134	-158.4*** -44.07	3.784 -3.625	-7.332 -8.259
Civil war t-1	1.311** -0.626	-0.256* -0.147	0.15 -1.782	0.239 -0.165	1.061** -0.52
Years of peac t-1	-0.017 -0.0168	0.0101*** -0.00386	-0.0353 -0.0488	0.00965** -0.00377	-0.00102 -0.0117
Regime type t-1	-0.0758* -0.0405	0.0898*** -0.0166	0.398** -0.161	0.0620*** -0.0127	-0.0857*** -0.0293
Log. GDP per capita t-1	0.399* -0.0405	0.0651 -0.0166	-1.435* -0.161	0.0898 -0.0127	0.295* -0.0293

		-0.238	-0.0613	-0.764	-0.0623	-0.171
Log population t-1	0.486**		0.0394	-1.096	-0.0371	0.135
		-0.197	-0.0516	-0.751	-0.0482	-0.118
Oil and gas value t-1		-0.118	-0.0396	-0.156	-0.0215	-0.0789
		-0.104	-0.0321	-0.38	-0.0287	-0.0741
Constant	-17.86***	-1.114	78.80***	-0.0176	-12.69***	
		-3.113	-0.976	-13.12	-0.884	-1.804
Observations	1,793	2,558	1,612	2,558	1,793	

Robust standard errors in parentheses

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

### 7.5.1 Sensitivity analysis. IV Wheat sugarcane, Physical integrity rights with economic freedom

VARIABLES	PIR 1990- 2015	PIR 1990- 2006	PIR 1990- 2006	PIR 1990- 2015	PIR 1990- 2015
Gini	-0.005** (0.002)				
Log. Exclusion of ethnic group t-1		0.164 (0.123)			
Log. Largest ethnic group t-1			0.078 (0.056)		
Power distributed by social group t-1				0.076** (0.036)	
Power distributed by social class t-1					0.166* (0.098)
Civil war t-1	-0.104*** (0.031)	-0.175 (0.118)	-0.147* (0.079)	-0.060** (0.030)	0.125*** (0.039)
Years of peace t-1	0.001** (0.001)	0.003 (0.002)	0.004* (0.002)	0.001 (0.001)	-0.000 (0.001)
Regime type t-1	0.022*** (0.004)	0.046*** (0.018)	0.029*** (0.007)	0.017*** (0.004)	0.014** (0.006)
Log. GDP per capita t-1	0.028* (0.014)	-0.017 (0.056)	0.001 (0.040)	0.018 (0.014)	0.004 (0.023)
Log population t-1	-0.031*** (0.011)	-0.003 (0.025)	-0.030 (0.021)	-0.022*** (0.007)	-0.010 (0.010)
Log Oil and gas value t-1	-0.004 (0.005)	0.027 (0.021)	0.017 (0.017)	0.002 (0.005)	0.004 (0.006)
Economic freedom t-1	0.002 (0.017)	-0.004 (0.042)	0.040 (0.042)	0.017 (0.017)	0.032 (0.020)
Constant	1.070*** (0.242)	2.002* (1.079)	1.243** (0.581)	0.644*** (0.147)	0.502*** (0.180)
Observations	1,694	1,436	1,436	2,414	2,414
R-squared	0.621			0.715	0.639

Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	26.31***	2.14	1.89	12.53***	4.14*
Kleibergen-Paap rk LM statistic	171.06***	12.80*	22.16	298.86***	64.09***

Robust standard errors in parentheses

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

### 7.5.2 IV wheat sugarcane with economic freedom with Farris LM

VARIABLES	Farris LM 1990- 2013	Farris LM 1990- 2006	Farris LM 1990- 2006	Farris LM 1990- 2013	Farris LM 1990- 2013
Gini	0.052*** (0.014)				
Log. Exclusion of ethnic group t-1		1.224 (0.878)			
Log. Largest ethnic group t-1			0.597 (0.453)		
Power distributed by social group t-1				0.738*** (0.284)	
Power distributed by social class t-1					1.591** (0.734)
Civil war t-1	0.823*** (0.145)	-1.238 (0.839)	-1.027** (0.524)	-0.436** (0.183)	1.053*** (0.323)
Years of peace t-1	0.007** (0.003)	0.021 (0.014)	0.030 (0.019)	0.005 (0.004)	-0.007 (0.010)
Regime type t-1	0.054*** (0.013)	0.200 (0.129)	0.071 (0.055)	-0.021 (0.027)	-0.050 (0.044)
Log. GDP per capita t-1	0.100 (0.079)	-0.141 (0.407)	-0.015 (0.292)	0.069 (0.091)	-0.049 (0.172)
Log population t-1	0.292*** (0.049)	-0.161 (0.151)	-0.359** (0.144)	-0.308*** (0.044)	-0.181** (0.073)
Log Oil and gas value t-1	0.016 (0.025)	0.247 (0.159)	0.174 (0.143)	0.061* (0.033)	0.077 (0.047)
Economic freedom t-1	0.254*** (0.072)	0.179 (0.291)	0.517** (0.256)	0.339*** (0.084)	0.456*** (0.165)
Constant	4.480*** (1.102)	11.568 (8.239)	6.000 (4.749)	1.949** (0.909)	0.319 (1.421)
Observations	1,555	1,430	1,430	2,174	2,174

R-squared	0.724			0.694	0.280
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	25.15***	2.14	1.85	13.18***	4.49*
Kleibergen-Paap rk LM statistic	477.4***	12.81*	21.67	292.92***	64.15***

Robust standard errors in parentheses

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

### 7.6.1 Sensitivity analysis IV-probit on PTS with wheat sugarcane, first stage

	Gini	ETG	LDG	PDSG	PDSC
	1990-2015	1990-2006	1990-2006	1990-2015	1990-2015
Civil war t-1	-2.042 (1.509)	0.666 (0.458)	1.056* (0.632)	-0.349** (0.158)	0.211 (0.167)
Years of peace t-1	-0.035 (0.036)	-0.005 (0.012)	-0.018 (0.017)	0.008** (0.004)	0.011*** (0.003)
Regime type t-1	0.349** (0.159)	-0.101** (0.042)	-0.019 (0.051)	0.088*** (0.019)	0.056*** (0.015)
Log. GDP per capita t-1	0.087 (0.789)	0.278 (0.200)	-0.045 (0.305)	-0.013 (0.082)	0.019 (0.079)
Log population t-1	0.027 (0.706)	-0.009 (0.111)	0.325 (0.208)	0.043 (0.060)	-0.031 (0.046)
Log Oil and gas value t-1	-0.111 (0.349)	-0.131* (0.078)	-0.163 (0.120)	-0.008 (0.032)	-0.025 (0.031)
Log. Wheat sugarcane	-22.388*** (4.355)	0.593 (0.615)	1.998 (1.506)	1.667*** (0.469)	0.929** (0.381)
Constant	43.475*** (12.726)	-10.133*** (1.755)	-11.716*** (3.660)	-0.332 (1.111)	0.507 (0.952)
Observations	1,654	1,526	1,526	2,370	2,370

### 7.6.2 Sensitivity analysis IV-probit on PTS with wheat sugarcane, second stage

VARIABLES	PTS 1999-2015	PTS 1990-2006	PTS 1990-2006	PTS 1990-2015	PTS 1990-2015
Gini	0.069*** (0.017)				
Log. Exclusion of ethnic group t-1		-0.493*** (0.075)			
Log. Largest ethnic group t-1			-0.300*** (0.046)		
Power distributed by social group t-1				-0.965*** (0.198)	
Power distributed by social class t-1					-1.168*** (0.143)
L.v2xeg_eqaccess					

Civil war t-1	1.287*** (0.246)	0.542* (0.282)	0.768** (0.346)	0.699* (0.361)	0.908*** (0.313)
Years of peace t-1	-0.005 (0.005)	-0.003 (0.007)	-0.008 (0.006)	0.001 (0.005)	0.008 (0.005)
Regime type t-1	-0.040** (0.020)	-0.052*** (0.017)	-0.010 (0.017)	0.068** (0.029)	0.054** (0.021)
Log. GDP per capita t-1	-0.167* (0.100)	0.100 (0.105)	-0.090 (0.135)	-0.193* (0.110)	-0.098 (0.118)
Log population t-1	0.279*** (0.089)	0.046 (0.074)	0.204** (0.088)	0.303*** (0.083)	0.138* (0.084)
Log Oil and gas value t-1	0.003 (0.041)	-0.065 (0.041)	-0.051 (0.045)	-0.013 (0.037)	-0.030 (0.037)
Constant	-5.687*** (1.736)	-5.505*** (1.178)	-4.590*** (1.288)	-2.989** (1.302)	-1.177 (1.137)

### 7.7.1 New indices with PIR

VARIABLES	PIR 1990-2015	PIR 1990-2015	PIR 1990-2015	PIR 1990-2015	PIR v2x_clphy
Equal resources t-1	0.208* (0.118)				
Health equality t-1		0.048* (0.028)			
Educational equality t-1			0.042* (0.025)		
Civil liberty by social group t-1				0.047* (0.026)	
Civil liberty by social class t-1					0.056* (0.030)
Civil war t-1	-0.080*** (0.027)	-0.084*** (0.027)	-0.077*** (0.027)	-0.071*** (0.027)	-0.088*** (0.025)
Years of peace t-1	0.001*** (0.000)	0.002*** (0.000)	0.001*** (0.001)	0.001* (0.001)	0.001** (0.001)
Regime type t-1	0.025*** (0.002)	0.024*** (0.002)	0.025*** (0.002)	0.023*** (0.003)	0.023*** (0.003)
Log. GDP per capita t-1	0.011 (0.017)	0.003 (0.022)	0.009 (0.019)	0.027*** (0.010)	0.015 (0.015)
Log population t-1	-0.011 (0.008)	-0.011 (0.008)	-0.012 (0.008)	-0.010 (0.008)	-0.010 (0.008)
Log Oil and gas value t-1	0.001 (0.004)	0.003 (0.005)	0.002 (0.005)	-0.001 (0.004)	0.001 (0.004)
Constant	0.522*** (0.131)	0.684*** (0.172)	0.648*** (0.152)	0.476*** (0.135)	0.554*** (0.131)
Observations	2,779	2,779	2,779	2,779	2,779
R-squared	0.722	0.720	0.715	0.734	0.742

Robust standard errors in parentheses

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

### 7.7.2 New indices with latent mean

VARIABLES	Fariss		Fariss	Fariss	Fariss
	LM	Fariss LM	LM	LM	LM
	1990-2013	1990-2013	1990-2013	1990-2013	1990-2013
Equal resources t-1	2.240*** (0.748)				
Health equality t-1		0.516*** (0.181)			
Educational equality t-1			0.455*** (0.153)		
Civil liberty by social group t-1				0.519*** (0.157)	
Civil liberty by social class t-1					0.603*** (0.197)
Civil war t-1	- 0.713*** (0.144)	- -0.759*** (0.154)	- 0.664*** (0.124)	- 0.598*** (0.145)	- 0.795*** (0.127)
Years of peace t-1	0.010*** (0.003)	0.010*** (0.003)	0.009*** (0.003)	0.005 (0.003)	0.008** (0.003)
Regime type t-1	0.031*** (0.011)	0.025** (0.012)	0.036*** (0.011)	0.020* (0.011)	0.015 (0.014)
Log. GDP per capita t-1	0.052 (0.113)	-0.030 (0.145)	0.021 (0.117)	0.224*** (0.054)	0.091 (0.096)
Log population t-1	- 0.226*** (0.040)	- -0.232*** (0.039)	- 0.232*** (0.037)	- 0.224*** (0.041)	- 0.212*** (0.038)
Log Oil and gas value t-1	0.028 (0.029)	0.046 (0.031)	0.041 (0.028)	0.004 (0.024)	0.025 (0.026)
Constant	2.083*** (0.675)	3.803*** (1.003)	3.482*** (0.829)	1.674** (0.677)	2.494*** (0.618)
Observations	2,510	2,510	2,510	2,510	2,510
R-squared	0.724	0.706	0.744	0.764	0.735
Estimator		2SLS-IV	2SLS-IV		
Country fixed effects		No	No		
Time fixed effects		Yes	Yes		
First-stage F-statistics		22,45***	25.46***		
Kleibergen-Paap rk LM statistic		384.02***	477.3***		

### 7.8.1 IV wheat sugarcane with V-Dem democracy on PIR

VARIABLES	PIR	PIR	PIR	PIR	PIR
	1990-2015	1990-2006	1990-2006	1990-2015	1990-2015

Gini	-0.003 (0.002)				
Log. Exclusion of ethnic group t-1		0.127 (0.151)			
Log. Largest ethnic group t-1			0.049 (0.040)		
Power distributed by social group t-1				0.051 (0.045)	
Power distributed by social class t-1					0.092 (0.084)
Civil war t-1	0.087*** (0.028)	-0.185 (0.124)	-0.144** (0.056)	-0.069** (0.030)	0.107*** (0.030)
Years of peace t-1	0.001* (0.001)	0.002 (0.001)	0.002* (0.001)	0.001 (0.001)	0.000 (0.001)
Regime type t-1 (V-dem)	0.703*** (0.085)	1.052*** (0.319)	0.854*** (0.110)	0.591*** (0.148)	0.553*** (0.187)
Log. GDP per capita t-1	-0.001 (0.013)	-0.041 (0.046)	-0.018 (0.023)	0.006 (0.010)	0.007 (0.010)
Log population t-1	-0.024** (0.010)	-0.010 (0.015)	-0.026 (0.018)	-0.015** (0.007)	-0.009 (0.007)
Log Oil and gas value t-1	-0.001 (0.005)	0.015 (0.019)	0.011 (0.011)	-0.001 (0.004)	-0.001 (0.005)
Constant	0.815*** (0.197)	1.657 (1.459)	1.084* (0.576)	0.524*** (0.135)	0.463*** (0.126)
Observations	1,896	1,773	1,773	2,820	2,820
R-squared	0.692		0.503	0.739	0.721
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	36.08***	1.26	1.69	12.65***	5.10*
Kleibergen-Paap rk LM statistic	588.5***	6.95	20.78*	251.74***	81.05***

Robust standard errors in parentheses

### 7.8.2 IV wheat sugarcane with V-Dem democracy on Farris LM

VARIABLES	Farris LM	Farris LM	Farris LM	Farris LM	Farris LM
	1990-2013	1990-2006	1990-2006	1990-2013	1990-2013
Gini	- 0.038*** (0.013)				
Log. Exclusion of ethnic group t-1		1.166 (1.085)			
Log. Largest ethnic group t-1			0.516 (0.489)		
Power distributed by social group t-1				0.621** (0.288)	
Power distributed by social class t-1					1.164*

					(0.618)
	-				-
Civil war t-1	0.849*** (0.161)	-1.588* (0.964)	-1.220** (0.522)	-0.564*** (0.182)	1.010*** (0.232)
Years of peace t-1	0.006** (0.003)	0.016 (0.014)	0.027 (0.018)	0.007** (0.004)	-0.000 (0.007)
Regime type t-1 (V-dem)	1.499*** (0.246)	3.788 (2.567)	2.066* (1.133)	-0.354 (0.967)	-0.907 (1.429)
Log. GDP per capita t-1	0.153** (0.071)	-0.124 (0.340)	0.043 (0.261)	0.248*** (0.068)	0.246*** (0.072)
	-				-
Log population t-1	0.314*** (0.049)	-0.273** (0.123)	-0.430** (0.185)	-0.304*** (0.044)	0.216*** (0.061)
Log Oil and gas value t-1	-0.001 (0.024)	0.156 (0.151)	0.131 (0.139)	0.020 (0.028)	0.018 (0.033)
Constant	5.038*** (1.061)	13.344 (10.730)	8.968 (6.819)	2.964*** (0.862)	2.016* (1.044)
Observations	1,736	1,744	1,744	2,549	2,549
R-squared	0.725			0.671	0.439
Estimator	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV	2SLS-IV
Country fixed effects	No	No	No	No	No
Time fixed effects	Yes	Yes	Yes	Yes	Yes
First-stage F-statistics	33.26*** 520.9	1.34	1.37	14.35***	5.15*
Kleibergen-Paap rk LM statistic	***	7.41	16.62	264.82***	76.19***

Robust standard errors in parentheses

### 7.8.3 IV wheat sugarcane with V-Dem democracy on PTS

VARIABLES	PTS 1999-2015	PTS 1990-2006	PTS 1990-2006	PTS 1990-2015	PTS 1990-2015
Gini	0.068*** (0.016)				
Log. Exclusion of ethnic group t-1		-0.488*** (0.078)			
Log. Largest ethnic group t-1			-0.288*** (0.049)		
Power distributed by social group t-1				-1.013*** (0.199)	
Power distributed by social class t-1					-1.207*** (0.151)
Civil war t-1	1.337*** (0.257)	0.565* (0.291)	0.749** (0.335)	0.586 (0.364)	0.894*** (0.311)
Years of peace t-1	-0.003 (0.005)	-0.002 (0.007)	-0.009 (0.006)	-0.001 (0.005)	0.007 (0.005)



Regime type t-1	-1.571*** (0.512)	-1.257** (0.532)	-0.768 (0.550)	1.893* (0.977)	1.775** (0.702)
Log. GDP per capita t-1	-0.087 (0.104)	0.112 (0.098)	-0.001 (0.131)	-0.193** (0.099)	-0.155* (0.090)
Log population t-1	0.300*** (0.092)	0.045 (0.072)	0.203** (0.086)	0.286*** (0.089)	0.125 (0.088)
Log Oil and gas value t-1	-0.002 (0.039)	-0.060 (0.038)	-0.074* (0.045)	-0.025 (0.037)	-0.028 (0.037)
Constant	-5.953*** (1.679)	-5.072*** (1.092)	-4.743*** (1.251)	-3.360** (1.347)	-1.233 (1.203)

