

ARE RICHER COUNTRIES MORE DEMOCRATIC? THE CASE OF MUSLIM-  
MAJORITY COUNTRIES

THE GRADUATE SCHOOL OF SOCIAL SCIENCES  
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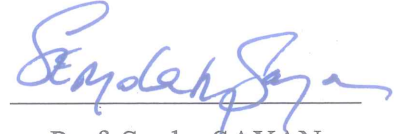
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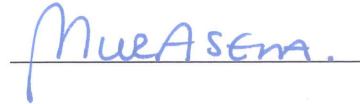
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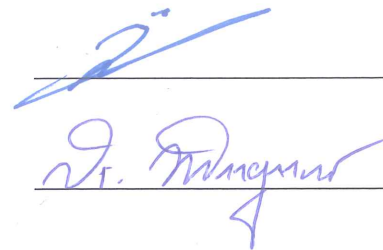
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Nurgül SEVİNÇ

## ABSTRACT

### ARE RICHER COUNTRIES MORE DEMOCRATIC? THE CASE OF MUSLIM- MAJORITY COUNTRIES

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In this study, the correlation between democracy and economic growth is investigated in the context of forty-six Muslim-majority countries. Although the relationship between democracy and economic variables has been quite popular in the literature, the case of Muslim-majority countries has been rarely studied. Moreover, the existing studies have not yet reached a clear conclusion considering the correlation. I study the time period 1960-2015 because this is the longest time span for which all of the variables of interest to this study are available. A contribution of the study is that data from four different sources that publish democracy indices for the specified time interval and countries are used. By using data from four sources that adopt different definitions of the multi-pronged concept of democracy, this study generates a more detailed and more reliable picture of the link between democracy and income per capita. One democracy index, called V-Dem, has been fairly recently developed and has several advantages over the other indices (Freedom House, Polity IV, and Vanhanen Democracy Indices). To estimate the regression model, the fixed effects model is chosen, since it takes into account the heterogeneity among countries, which is quite high. The results support the hypothesis that in the group of Muslim-majority countries and in the time period 1960-2015; *ceteris paribus*, the ones that have a higher domestic product per capita are the ones that are more democratic.

**Keywords:** Democracy, economic growth, Muslim-majority countries

# ÖZ

## DAHA ZENGİN ÜLKELER DAHA MI DEMOKRATİK? NÜFUSUNUN ÇOĞU MÜSLÜMAN OLAN ÜLKELER ÖRNEĞİ

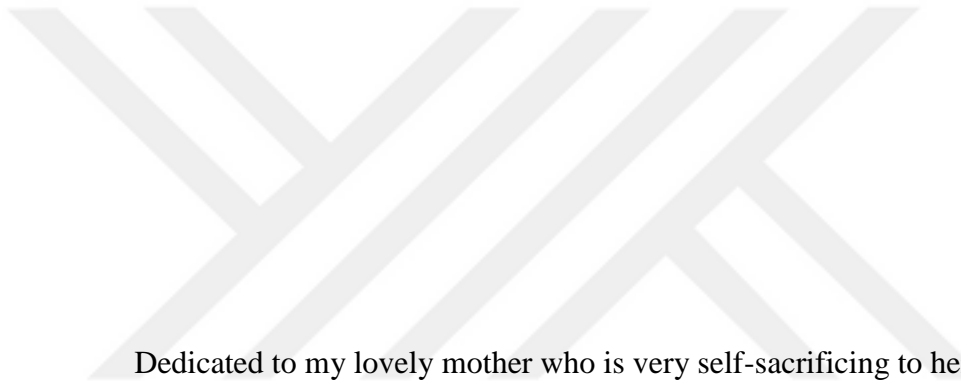
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Bu çalışmada, demokrasi ve iktisadi büyüme arasındaki ilişki nüfusunun çoğu Müslüman olan kırk altı ülke bağlamında araştırılmıştır. Demokrasi ve ekonomik değişkenler arasındaki ilişki literatürde oldukça popüler olmasına rağmen, nüfusunun çoğu Müslüman olan ülkeler örneği seyrek çalışılmıştır. Üstelik, mevcut çalışmalar söz konusu ilişki düşünüldüğünde henüz net bir sonuca ulaşmamıştır. 1960-2015 zaman aralığını çalışıyorum çünkü bu, çalışmadaki ilgili tüm değişkenlerin mevcut olduğu en uzun aralıktır. Çalışmanın bir katkısı, belirtilen zaman aralıkları ve ülkeler için demokrasi indeksi yayınlayan dört farklı kaynaktan verilerin kullanılmış olmasıdır. Çok yönlü bir kavram olan demokrasinin farklı tanımlarını benimseyen dört kaynaktan veriler kullanarak, bu çalışma demokrasi ve kişi başına gelir arasındaki bağlantının daha detaylı ve daha sağlıklı resmini çizmektedir. V-Dem olarak adlandırılan bir demokrasi indeksi, oldukça yakın zamanda geliştirilmiştir ve diğer indekslere (Freedom House, Polity IV ve Vanhanen Demokrasi İndeksi) karşı birçok avantaja sahiptir. Regresyon modelini tahmin etmek için sabit etkiler modeli seçilmiştir çünkü o, ülkeler arasında oldukça yüksek olan heterojenliği göz önünde bulundurmaktadır. Sonuçlar, nüfusunun çoğu Müslüman olan ülkeler grubunda ve 1960-2015 zaman aralığında hipotezi desteklemektedir; tüm diğer unsurlar sabitken, kişi başına yurt içi hasılası yüksek olanlar daha demokratik olanlardır.

**Anahtar Kelimeler:** Demokrasi, iktisadi büyüme, nüfusunun çoğu Müslüman olan ülkeler



Dedicated to my lovely mother who is very self-sacrificing to her children

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# CHAPTER I

## INTRODUCTION

Earlier studies in the literature have generated a diverse set of findings on the correlation between democracy and economic activity. Some studies report a positive relationship between the two variables whereas others report a negative relationship. Some others advocate an inverse-U shaped relationship, in which when a country moves to a more democratic regime, per capita income increases first and then it decreases. Some other studies argue that the relationship could be both direct and indirect. The different findings of the studies can be explained by the differences in the countries and time intervals examined, the statistical methods used, the data sets from which the variables are retrieved, or the way the variables are defined. As a consequence, evidence collected is still inconclusive and the topic preserves its mystery.

The majority of the studies in the received literature estimate a positive relationship between democracy and economic growth. According to Doucouliagos and Ulubaşoğlu (2008)<sup>1</sup>, “democracy has robust, significant, and positive indirect effects on economic growth through higher human capital, lower inflation, lower political instability, and higher levels of economic freedom”. Supportively, by using data for the years between 1970 and 1989, Nelson and Singh (1998) conclude that developing countries that have

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<sup>1</sup> Doucouliagos and Ulubaşoğlu (2008) use 84 studies, which are the ones examining the correlation between economic growth and democracy and the results of them are comparable regarding specified criteria. These articles are the ones that were published until December 2005. Thus I should note that from such a broad literature including at least 84 studies I select the articles, in this study, considering the most relevant ones to this topic.

higher levels of “political and civil liberties” reach significantly higher growth rates of GDP compared to the countries that have autocratic governments. According to Friedman (2007), electoral democracies have a higher tendency to perform better. In a study on a smaller number of countries, Jamal (2005) states that by fostering the economic foundation, the democratic trajectory will improve in Palestine. Feng (1997) claims that by affecting regime change and constitutional government change, democracy has an indirect and positive effect on economic growth. In addition, economic growth positively influences democracy. However, on the contrary, Aisen and Veiga (2013) use a sample that includes 169 countries and state that democracy may have a negative impact on economic growth. The variables are available every five years during the period from 1960 to 2004. Other than the studies supporting positive and negative relationships, Helliwell (1994), Krieckhaus (2004) and Arat (1988) assert an ambiguous relationship. Also, Plümper and Martin (2003) support an inverse u relationship. As a different and an inclusive perspective, Krieckhaus (2006) argues that

Democracy clearly can constrain growth, particularly in contexts where societal groups demand extensive redistribution, or distract state officials from their pursuit of economic growth. Democracy can also facilitate growth, especially in contexts where there is strong need to evict corrupt public officials. Theory was right all along, but was difficult to confirm when pooling all countries into a single data set.

Since Krieckhaus (2006) adopts a region-based approach, accordingly, democracy may have different influences on economic growth in different regions in the world. Specifically, while democracy negatively affects economic growth in Latin American and Asian countries, it positively influences economic growth in African countries. Thus, I prefer to examine the correlation between these two variables not by using all the countries

in the world in a single data set but by using a specific country group: Muslim-majority countries. The reason why I prefer this country group to use is that no empirical articles which examine the relationship between democracy and economic growth have studied in a sample of solely Muslim-majority countries in the world. Even though, these countries are included in analyses where more extensive country groups exist, by using a separate country group I may estimate different results. Other than these studies, in terms of the content, the closest topics that have been studied are: “Islam and Democracy” and “Islam and Economic Growth”, which are evaluated in detail in the part of “Related Literature.”

In this study, I prefer the word correlation/relation rather than causation because of two reasons: firstly, causal connections are more difficult to exist, and secondly, if a causality exists, demonstrating the establishment of that causality is more difficult. These concerns can be understood better considering the definitions of causality and correlation, “*Causality* is understood as a *phenomenological* description of the necessary, universal, and uniform connection between two temporally simultaneous or successive events where the one is understood to be the *cause* and the other its *effect*” while “Correlation describes the degree or level of association between or the expected rate of appearance of two unrelated or random variables” (Sassower, 2017). Therefore, in this study, the correlation between democracy and economic growth is examined, rather than the causality between them. Thus, as a hypothesis, I predict a positive relation between democracy and economic growth by using a sample consisting of Muslim-majority countries between the years 1960 and 2015. Figures, in Appendix 10.1., where V-Dem<sup>2</sup> and Vanhanen Democracy Index

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<sup>2</sup>As exceptions, the figures where V-Dem data set are used and democracy variables are represented by electoral democracy and participatory democracy offer a negative relation between democracy and economic growth.

are used, confirm the hypothesis considering lines that represent fitted values.

There are many democracy measures that are produced by different institutions such as foundations, universities, and non-governmental organizations. These measures cover different time periods, and number of countries. To illustrate, while The Bertelsmann Stiftung's Transformation Index (BTI), where the quality of democracy is evaluated, includes 129 countries for the years between 2003-2016 (Transformation Index BTI, 2016), World Governance Indicators reports governance indicators for 214 countries and territories for the period 1996-2016 (Worldwide Governance Indicators, 2017). However, as a measure of democracy, four different data sets developed by Freedom House, Polity IV, V-Dem, and Tatu Vanhanen, which are the only extensive data sets including all the Muslim-majority countries in the world for the time periods between 1960 and 2015<sup>3</sup>, are used in this analysis to estimate the relationship between democracy and economic growth. Consequently, I will take the opportunity of comparing and/or confirming the findings that are acquired by using four different data sets. Also, it should be noted that while Freedom House and Polity IV are popular data sets, V-Dem and Vanhanen Democracy Index are less popular considering their use in the literature. In particular, V-Dem is comparatively the newest democracy index, which can be the main reason for its being less popular, and is of five different measures of democracy, thereby differentiating from other data sets.

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<sup>3</sup> I should note that in each data set, a few Muslim-majority countries are missing. Also, while the years between 1960 and 2015 exist in Polity IV and V-Dem data sets, Freedom House data set starts from 1972 and Vanhanen Democracy Index ends in 2014.

## CHAPTER II

### RELATED LITERATURE

#### 2. 1. Democracy and Economic Growth: A General Approach

Considering the relationship between economic growth and democracy, there are scientists supporting no certain relationship, one-way positive relationship, two-way positive relationship, one-way negative relationship and inverse-U relationship.

Regarding the articles promoting an ambiguous relationship, Helliwell (1994) examines the interaction between democracy and economic growth by using time series cross-section data for 125 countries for the period between 1960 and 1985. Accordingly, it is unlikely to detect a systematic net impact of democracy on economic growth. Similarly, according to Krieckhaus (2004), where a wide cross-section of countries and analyses are used, an interesting finding is that many of the conflicting results in the literature regarding the correlation between democracy and economic growth may be driven by selected time period. Another major conclusion of this article is that answering the question whether democracy affects economic growth requires “explicit comparison and evaluation of alternative specifications”. Accordingly, democracy does not have a “generalized unidirectional effect” on economic growth. By using 64 to 130 countries for the years from 1948 to 1977, another article claims that firstly, there is a widely varied relationship considering levels of socioeconomic development and democracy. “Democracy is not a one-way ladder that countries climb as their economy and social structures develop”. Secondly, shifts on the level of democracy exist in a good deal of countries (Arat, 1988).

Some claim one-way positive relationship from democracy to economic growth. After examining all the available published studies, Doucouliagos and Ulubaşođlu (2008) conclude that rather than a direct influence of democracy on economic growth, it has “robust, significant, and positive indirect effects through higher human capital, lower inflation, lower political instability, and higher levels of economic freedom” on economic growth. Additionally, country- and region-specific democracy and growth relation may exist. Another article differentiates specified developing countries from others by claiming that

developing countries with governments that provided higher levels of political and civil liberties to their citizens achieved significantly higher GDP growth rates than those with autocratic governments. Our statistical tests reject the notion of reverse causality in the democracy-growth link; that is, economic growth necessarily leads to a more democratic political environment (Nelson and Singh, 1998).

Friedman (2007) states that electoral democracies are more likely to perform economically better. In addition, he emphasizes the temperate protection of property rights as follows “too much democracy exerts a negative influence on an economy's growth. Effective 'rule of law' especially the protection of property rights, matters for economic growth”.

On the other hand, some assert one-way positive relationship that is from economic growth to democracy. According to an article that is on democratic and economic reforms in Palestine, “developing the stunted economy and easing the unemployment crisis” will strengthen Palestine's democratic process. Simultaneous reforms in economics and



politics are the key to the success of democratization in the region. The effectiveness of reforms is associated with the success of governments to adopt appropriate economic policies (Jamal, 2005).

In addition, one advocates a two-way positive relationship: “democracy has a positive indirect effect upon growth through its impacts on the probabilities of both regime change and constitutional government change from one ruling party to another”. Also, long-run economic growth appears to positively affect democracy. This analysis uses a data set including ninety-six countries from the years 1960 to 1980 (Feng, 1997).

An article predicts one-way negative relationship by using linear dynamic panel data models including 169 countries for 5-year periods from 1960 to 2004. Accordingly, it is found that as political instability increases the growth rate of GDP per capita decreases and, furthermore, “economic freedom and ethnic homogeneity are beneficial to growth, while democracy may have a small negative effect” (Aisen and Veiga, 2013).

Another article suggests a non-linear and inverse-U shaped relation between the level of democracy and the growth of per capita income. To be more specific, “neither purely autocratic nor fully democratic countries achieve rates of economic growth that match those of countries with intermediate levels of democracy” (Plümer and Martin, 2003). This result is very similar considering Friedman (2007) where the temperate level of democracy, especially the protection of property rights, is claimed to be crucial for economic growth.

## **2. 2. Democracy and Economic Growth: A Region-Based Approach**

As a common point, the articles supporting an ambiguous relationship between democracy and economic growth have samples including a good deal of countries rather than a specific group of countries. Hence, use of a sample consisting of wide range of countries may relatively lead to ambiguous results. Even though, the findings of some articles such as Aisen and Veiga (2013) and Feng (1997) may be regarded as exceptional, however, still a region-based approach may help obtain more distinct results.

According to Krieckhaus (2006) regime effects are region-specific: “In the Latin American and Asian countries, democracy has a significant negative effect on economic growth. In the African countries, by stark contrast, democracy has a significant positive effect on economic growth.” This result is valid for a broad time period from 1960 to 2000. As a supporting view, Rodrik (2008) suggests that among high-growth countries, Taiwan, Singapore, and Korea have low levels of democracy between 1970 and 1989. However, accordingly, some other countries, especially Botswana and Mauritius, perform better under “fairly open political regimes”. He further adds that “poor performances can similarly be found at either end of the democratic spectrum: South Africa and Mozambique have done poorly under authoritarian regimes, Papua New Guinea and Jamaica under relatively democratic ones”, while he prominently favors participatory democracies by stating that “participatory democracies enable higher-quality growth: they allow greater predictability and stability, are more resilient to shocks, and deliver superior distributional outcomes.”

### **2. 3. Democracy and Islam**

In the literature, different findings exist considering the relation between democracy and Islam. Some suggest a negative correlation between these variables. Potrafke (2012), for example, claims that as the share of Muslims in a society increases, the probability of a country's having democratic institutions decreases. Furthermore, the study suggests that "Democratic institutions provide political and economic freedom which are foundations for economic development. By compromising these democratic institutions, countries with Muslim majorities tend to have relatively low living standards." Additionally, Rowley and Smith (2009) argue that the comparative deficiency of both democracy and freedom in Muslim-majority countries is likely to be related to Islam. They further associate these deficiencies with "the lack of religious freedom". According to Mobarak (2005) the link between Muslim countries and low levels of democracy is as follows: firstly, since most Muslim countries have been European colonies, they are on average newly established countries. If democracy is assumed as "the end product of years or centuries of political evolution", it is expected that these countries are averagely less democratic. Secondly,

the Middle East (where most Muslim countries are located) has historically been populated by tribal cultures where forms of hereditary rule have dominated (see Lewis, 1996), and until today, countries in this region remain more monarchic than the rest of the world. Thirdly, unlike the two other major world religions, Islam through its codebook of law - the Sharia - provides guidance for not just spiritual life, but also political life.

With the third statement, Mobarak (2005) refers to Huntington (1991): “Islamic concepts of politics differ from and contradict the premises of democratic politics”. Fish (2002) underlines the deficiency in democracy considering Muslim societies by arguing that “Muslim countries are markedly more authoritarian than non-Muslim societies, even when one controls for other potentially influential factors; and the station of women, more than other factors that predominate in Western thinking about religious systems and politics, links Islam and the democratic deficit.”

Apart from the view of a negative relation between Islam and democracy, Abootalebi (1995) emphasizes the neutral role of Islam on democracy by stating that “Islam as a religion per se neither encourages nor hinders democratization.”

## **2. 4. Islam and Economic Growth**

Some articles support a negative correlation between Islam and economic growth, but offer different reasons underlying the relation. Hillman (2007) asserts that “Arab and also other Muslim societies without oil have lower incomes than non-Muslim neighbors who similarly are without natural resource wealth... The supreme values of radical Islam de-prioritize economic achievement and impose self-deprivation on own populations.” Supportively, Platteau (2008) states that regarding the present crisis of Islamic societies, culture, particularly religion, can be a hindrance to progress. He explains the reason behind this notion as follows:

In Islam, no clear chain of command exists that is able to enforce a strict, uniform interpretation of the message of the faith. The consequence of this situation is that socio-religious movements eager to block progress toward individual

emancipation have numerous possibilities open to them and elites are provided with a rather cheap default option whereby they can escape the effects of their misrule and suppress political opposition.

Unlike Hillman (2007) and Platteau (2008), Kuran (1997) expresses the key element explaining the question of why Muslim countries are underdeveloped as follows: “the role of public discourse in keeping individuals from questioning, even noticing, social inefficiencies”; hence Islam itself is not an answer to this question.

However, others find a relationship that is not negative between Islam and economic growth. Pryor (2007) concludes that “the presence of Islam has relatively little influence on most economic or social performance indicators. In the analysis of Muslim economies, religion does not appear to be a useful explanatory variable.” According to estimation results, Noland (2005) underlines that Islam does not prevent economic growth; “On the contrary, virtually every statistically significant coefficient on Muslim population shares reported in this paper—in both cross-country and within-country statistical analyses—is positive.” However, contemporary Islam is unlikely to be a drug for economic growth. Barro and McCleary (2003) claim that Religion has contradicting influences on economic growth: while church attendance causes a decrease in economic growth, religious beliefs, in particular hell and heaven, cause an increase in economic growth. Hence, the net effect depends on attendance of church and the extent of religious beliefs.



## CHAPTER III

### DATA SETS

#### 3. 1. Freedom House

Freedom House (FH) assesses freedom levels of countries from 1972 by assigning numerical ratings for political rights (PR) and for civil liberties (CL). It has a scale from 1, which denotes that the country is the most free, to 7, which represents that the country is the least free.<sup>4</sup> The average of a country's political rights and civil liberties ratings which are used as democracy<sup>5</sup> values in this study, determines the categories of countries as Free (1.0-2.5), Partly Free (3.0-5.0), or Not Free (5.5-7.0) (Freedom in the World, 2017).

To detail Political Rights and Civil Liberties, Political Rights ratings include assessments of the extent of having political rights such as elections, the quality of representation of minority groups in politics and government, the functioning of elected and competitive parties, and the importance of the role of the opposition. Civil liberties ratings include assessments of the extent of civil liberties, including the degree of “freedoms of expression, assembly, association, education, and religion”, and fairness of

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<sup>4</sup> However, in order to compare Freedom House data set with other (alternative) data sets, democracy variable is arranged as follows: each democracy variable is subtracted from 8; thus a high democracy value represents a high democracy level of a country.

<sup>5</sup> According to Freedom House, democracy is a system that should include a wide range of checks and balances, other than elections, “that ensure freedom and resilience over time, such as a free press, independent courts, legal protections for minorities, a robust opposition, and unfettered civil society groups” (Freedom in the World, 2017 (Referendums and Democratic Fragility)).

legal system; i.e. the establishment of the rule of law, equal opportunity for everyone, and freedom of economic activity (Freedom in the World, 2017).

As an extra information, the difference between a country's political rights and civil liberties ratings is generally less than two points since "politically oppressive states typically do not allow a well-developed civil society" (Freedom in the World, 2017).

From a historical perspective, "Raymond Gastil, from the University of Washington in Seattle, developed the methodology of The Comparative Study of Freedom, which assigned political rights and civil liberties ratings to 151 countries and 45 territories and categorized them as Free, Partly Free, or Not Free." The data set, "Country and Territory Ratings and Statuses", is continued to be produced by external analysts, expert advisers, regional specialists and Freedom House staff (Freedom in the World, 2017). The materials that are used are "on-the-ground research, consultations with local contacts, and information from news articles, nongovernmental organizations, governments, and a variety of other sources" (Freedom House, 2017).

The methodology of the report Freedom in the World is mainly reproduced by the "Universal Declaration of Human Rights, adopted by the UN General Assembly in 1948". *Freedom in the World* applies these standards to all countries and territories. *The report* assumes that "freedom for all peoples is best achieved in liberal democratic societies". Also, it rates the freedoms of individuals, not governments (Freedom in the World, 2017).



### 3. 2. Polity IV

The Polity IV data set covers all major, and independent states in the world starting the year 1800. The Polity IV Project constantly observes regime changes in all these countries and presents “annual assessments of regime authority characteristics, changes and data updates” (Center for Systemic Peace, 2016).

The "Polity Score" has the regime authority spectrum between -10 “(hereditary monarchy)” and +10 “(consolidated democracy)”. The scores are categorized as: "autocracies (-10 to -6), anocracies (-5 to +5 and three special values: -66, -77 and -88), and democracies (+6 to +10)” (Center for Systemic Peace, 2016). However, it should be noted that to facilitate the use of Polity variable in panel data analysis, these special values are converted into the normal range from -10 to +10. This revised version of Polity<sup>6</sup> is called Polity2<sup>7</sup> which is the variable used in this study as a measure of democracy (Marshall et al., 2017).

“The original Polity conceptual scheme was formulated and the initial Polity I data collected under the direction of Ted Robert Gurr and informed by foundational, collaborative work with Harry Eckstein, *Patterns of Authority: A Structural Basis for*

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<sup>6</sup>“POLITY, is derived simply by subtracting the AUTOC (autocracy) value from the DEMOC (institutionalized democracy) value; this procedure provides a single regime score that ranges from +10 (full democracy) to -10 (full autocracy)” (Marshall et al. 2017).

<sup>7</sup> Special values (-66, -77, and -88) in Polity variable are modified to take the conventional polity scores, within the range -10 to +10. -66 (interruption periods) is treated as "system missing", -77 (interregnum periods) is converted to “neutral” and a score of “0”, and -88 (transition periods) transform into a value as the following way: “for example, country X has a POLITY score of -7 in 1957, followed by three years of -88 and, finally, a score of +5 in 1961. The change (+12) would be prorated over the intervening three years at a rate of per year so that the converted scores would be as follows: 1957 -7; 1958 -4; 1959 -1; 1960 +2; and 1961 +5.” Also note that “Ongoing (-88) transitions in the most recent year (2006) are converted to ‘system missing’ values. Transitions (-88) following a year of independence, interruption (-66), or interregnum (-77) are prorated from the value ‘0’” (Marshall et al., 2017).

Political Inquiry (New York: John Wiley & Sons, 1975)” (Marshall et al., 2017). The data set is revisited a few times to reach its contemporary version, and Polity is continuously examined by “analysts and experts in academia, policy and the intelligence community”.

The Polity conceptual scheme is unique in that it examines concomitant qualities of democratic and autocratic authority in governing institutions, rather than discreet and mutually exclusive forms of governance. This perspective envisions a spectrum of governing authority that spans from fully institutionalized autocracies through mixed, or incoherent, authority regimes (termed "anocracies") to fully institutionalized democracies (Center for Systemic Peace, 2016).

Hence, the type of democracy included in Polity variable is institutionalized democracy.<sup>8</sup>

The Polity scheme includes six component measures in which “key qualities of executive recruitment, constraints on executive authority and political competition” are recorded. Also, changes in the institutional qualities of governments are evaluated (Center for Systemic Peace, 2016).

### **3. 3. V-Dem**

The data set consists of 177 countries from 1900 with annual updates. Varieties of Democracy (V-Dem) is a new perspective in defining and measuring democracy, since it is a “multidimensional and disaggregated” data set reflecting the sophistication of the

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<sup>8</sup> According to institutionalized democracy, democracy has three essences: “One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation” (Marshall et al., 2017).

concept of democracy as a regime type. It includes “five high-level principles of democracy: electoral, liberal, participatory, deliberative, and egalitarian”, all of which are used in this study as measures of democracy<sup>9</sup> (V-Dem Institute, 2016). Note that each democracy index takes a value between 0 and 1.

From a historical perspective, the first version of the data set is released for 68 countries without a detailed division of types of democracy in March 2014 (Coppedge et al., 2014).

Approximately 2,500 local and cross-national experts from over 160 countries provide knowledge on democracy across the world for the V-Dem project. In addition, the project cooperates with a number of international organizations that work in the sphere of democracy and development, thereby providing the contributions of democracy experts both from academia and the policy world (V-Dem Institute, 2016).

While approximately 50% of the indicators in the V-Dem data set are from objective documents such as “constitutions and government records”, the remaining 50% includes more subjective evaluations on topics such as “political practices and compliance with de

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<sup>9</sup> Definitions of types of democracy in V-Dem Project are as follows: “*The electoral principle of democracy* seeks to embody the core value of making rulers responsive to citizens, achieved through electoral competition for the electorate’s approval under specific circumstances. *The liberal principle of democracy* emphasizes the importance of protecting individual and minority rights against the tyranny of the state and the tyranny of the majority. *The participatory principle of democracy* emphasizes active participation by citizens in all political processes, electoral and non-electoral. *A deliberative process* is one in which public reasoning focused on the common good motivates political decisions. *The egalitarian principle of democracy* holds that material and immaterial inequalities inhibit the exercise of formal rights and liberties, and diminish the ability of citizens from all social groups to participate. It should also be noted that, in the V-Dem conceptual scheme, electoral democracy is understood as an essential element of any other conception of (representative) democracy – liberal, participatory, deliberative, egalitarian, or some other” (Coppedge et al., 2017).

As an extra information, in addition to five measures of democracy, V-Dem continues to study on two other measures of democracy: majoritarian and consensual (Josefine Pernes, Email to author, September 1, 2017).

jure rules”. Note that five experts generate ratings on these types of issues (V-Dem Institute, 2016).

### **3. 4. Vanhanen Democracy Index**

The data set is annual and between the years 1810 and 2014. The data set developed by Tatu Vanhanen consists of three different variables: “political competition, political participation and the index of democratization” (Finnish Social Science Data Archive, 2017). The index of democratization is minimum 0, and maximum 49.

To detail the variables in the data set, the political competition variable represents the electoral success which is the percentage of votes captured by the smaller parties in elections that are parliamentary and/or presidential. In countries where solely independent candidates participate in elections, the share of the largest party is assumed to be less than 30 percent. The political participation variable denotes the number of voters in each election, and is calculated as the percentage of the total population voting in the election. The maximum value of the “combined degree of participation” is 70 percent. Finally, the index of democratization is generated by multiplying the competition and the participation variables and then dividing the result by 100 (Finnish Social Science Data Archive, 2017).

It should also be noted that the data set is collected by Tatu Vanhanen (University of Tampere, Department of Political Science and International Relations) and Krister Lundell (Åbo Akademi University, Department of Political Science) between the years 1970 and 2015 (Finnish Social Science Data Archive, 2017).

### 3. 5. Comparison of Data Sets

The four data sets, Freedom House, Polity IV, V-Dem, and Vanhanen Democracy Index, have their own advantages and disadvantages. Given the starting years of them, Polity IV (1800), Vanhanen Democracy Index (1810), and V-Dem (1900) are more inveterate than Freedom House (1972). However, while Freedom House, Polity IV, and V-Dem annually update their data sets, Vanhanen Democracy Index ends in 2014. Considering scales, Freedom House rankings range between 1 and 7 with 0.5 point interval regarding the average of Political Rights and Civil Liberties values,<sup>10</sup> Polity IV ranges from -10 to +10 with 1 point interval, V-Dem ranges from 0 to 1 with 10<sup>-16</sup> point interval, and Vanhanen Democracy Index ranges from 0 to 49 with 0.1 point interval. Hence, V-Dem provides the most extensive scale of democracy measures. The democracy type used in Vanhanen Democracy Index is electoral democracy, and the democracy type used in Freedom House is, in addition to electoral democracy, liberal democracy, while Polity IV measures institutionalized democracy. However, V-Dem includes five types of measures of democracy; thus V-Dem has the most extensive content in terms of measures of democracy. While democracy measures of Freedom House, Polity IV, and Vanhanen Democracy Index are subjective, V-Dem consists of subjective and objective assessments. Including objective assessments may provide an advantage for V-Dem in terms of being more transparent. Also, while V-Dem and Vanhanen Democracy Index take both individuals/society and political groups/governments into consideration, Freedom House assesses freedom of individuals, on the contrary, Polity IV considers political

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<sup>10</sup> Even though Freedom House produces aggregate scores of countries ranges from 0 to 100 with 1 point interval, these scores, unfortunately, are not available in the historical context.

groups/governments in generating their democracy indexes. Overall, V-Dem is of more advantages than other data sets.

### **3. 6. Issues Related to the Data Sets**

Each data set in this study has many missing observations in many variables. Therefore, these unbalanced panel data sets give less information about cross-sections compared to balanced panel data sets. Also, within-cluster variation in democracy variables is low for some countries in the data sets. In order to remedy the problem of missing data, increase within-cluster variation or at least decrease the number of same observations, and also reduce cyclical effects, five- year and ten-year averages of each variable in four different data sets are calculated. This method, the use of five-year and ten-year averages, is used by Krieckhaus (2006) for the years between 1960 and 2000, since, accordingly, one-year averages lead to “extremely low correlation coefficients and a lack of significance for most variables”. In addition to Krieckhaus (2006), the method of averaging of variables is used by Feng (1997) to estimate the long run relationship between political environment and economic development from 1960 to 1980.

With the use of five-year and ten-year averages, the number of cross-sections, which are countries in this study, becomes forty six ( $N=46$ ), a few countries are missing in data sets, and time period becomes less than 20 ( $T<20$ ). Hence, according to Baltagi (2013),  $N$  is moderately sized and  $T$  is small. Therefore, I assume these data sets as micro panels, even though  $N$  is not categorized as large. The asymptotics for micro panels are for large  $N$  and fixed  $T$ . While for macro panels, issues of non-stationarity such as unit roots, structural breaks, and cointegration, and also cross-sectional dependence should be taken

into consideration, for micro panels, non-stationarity issues are not a concern since  $T$  is short. Also, cross-sectional dependence is not usually a problem in micro panels where cross-sections are randomly sampled; thus, they are unlikely to be correlated. Nevertheless, cross-sections are not randomly sampled in this study, rather they are included considering a common religion, Islam. Hence, cross-sectional dependence may be an issue. However, because for short  $T$  models, tests for cross-sectional dependence will not produce reliable results, such tests are not carried out.





## CHAPTER IV

### VARIABLES

Variables used in this study and their expected correlations with democracy are as follows:

- 1) According to Chang (2011), an increase in income may improve democracy levels of countries through three channels: first, increasing the demand for higher-quality institutions; second, making more qualified institutions more affordable; and third, triggering the demand for new institutions. Thus, *log of GDP per capita* is expected to affect democracy in a positive manner.
- 2) Brennan and Buchanan (1980) and Huntington (1991) support that society demands representation in return for the high level of taxes. Hence, a positive correlation is expected between democracy and *tax revenue*.
- 3) According to Cordova and Meissner (2005), an autonomous move from autarchy to the average level of openness, to measure the latter *trade* is used in this study, can raise a country's democracy measure by between three and five points in the long run. I expect that as levels of openness of countries increase, which means as their economies liberalize more, they demand a regime type that is more liberal; i.e. democracy. Consequently, I expect a positive correlation between the two.
- 4) Schooling, represented by *secondary enrollment rate* in this study, provides the socialization of young people and political involvement is one of the types of this

socialization (Glaeser et al. 2007). Thus, I expect a positive relation between the two.

- 5) According to Acemoglu and Robinson (2000), *social unrest* leads to democratization in Germany after the shock of the World War I. If collective dissatisfaction, i.e. social unrest, increases, individuals are more likely to demand a more democratic regime thereby having the opportunity of representation of themselves more. Consequently, a positive correlation between the two is expected.

Descriptions and sources of the variables are listed in Appendix 10.2., and summary statistics of the variables are in Appendix 10.3.

## CHAPTER V

### THE ADVANTAGES AND DISADVANTAGES OF PANEL DATA

The advantages of the use of panel data in this study outweigh the disadvantages of it.

According to Baltagi (2013),

- 1) Panel data provides the control for heterogeneity of cross-sections since panel data assume that cross-sections are heterogeneous. However, time series and cross-section studies which do not control for the heterogeneity may cause biased results.
- 2) Panel data include “more informative data, more variability, less collinearity among the variables, more degrees of freedom, and more efficiency.” Nevertheless, time series studies are more likely to deal with multicollinearity problem.
- 3) Panel data include “dynamics of adjustment” as being different than cross-section data which may hide many changes. In particular, if panel data are sufficiently long, they can reflect the changes in the cross-sections.
- 4) Panel data are more appropriate in identifying and measuring effects that may not be determined in cross-section or time series data. For example, by using a fixed effects estimator, the problem of time-invariant variables may be eliminated in a panel study.
- 5) Panel data allow generating “more complicated behavioral models.”

However, panel data have some drawbacks also:

- 1) Panel data may have problems in designing and collecting the data such as the problems of “coverage (incomplete account of the population of interest), nonresponse (due to lack of cooperation of the respondent or interviewer error), recall (respondent not remembering correctly), frequency of interviewing, interview spacing, reference period, the use of bounding, and time-in-sample bias.”
- 2) Panel data may cause measurement error problems. They may arise due to “faulty responses due to unclear questions, memory errors, deliberate distortion of responses, inappropriate informants, misrecording of responses, and interviewer effects.”
- 3) Panel data may lead to selectivity problems: self-selectivity, nonresponse, and attrition. By self-selectivity, the following is implied: for example, to acquire electoral democracy index in V-Dem data set, one of the variables used is clean elections which includes some sub-indexes such as election other voting irregularities. To form this sub-index, the question that is asked to citizens is: “In this national election was there evidence of other intentional irregularities by incumbent and/or opposition parties, and/or vote fraud?” When individuals answer this question, they may answer reflecting their emotional thinking towards incumbent and/or opposition parties, rather than reflecting evidences. In this case, the personalities of the individuals are observed not the intentional irregularities (Teorell et al., 2016).

By nonresponse, “the initial wave of the panel due to refusal to participate, nobody at home, an untraced sample unit, and other reasons” is implied.

By attrition, the following is implied: “respondents may die, move or find that the cost of responding is too high.”

- 4) Panel data may have short/long time series dimension. A short time span gives less information about cross-sections, while a long time span increases the probability of attrition.





## CHAPTER VI

### RESULTS

#### 6. 1. Results of the Basic Model

To estimate the correlation between democracy and economic growth fixed effects model is used. According to Yerdelen Tatoğlu (2016), the reason for the use of this model is that the cross-sections are not randomly selected, as in random effects model, rather they form a specific data set consisting of Muslim-majority countries in the world. Also, the correlation between cross-section effects and explanatory variables is allowed to be different than zero in fixed effects model, while it is zero in random effects model. Hence, the model is particularly advantageous since it takes the heterogeneity among countries into account. In addition, in fixed effects model, the existence of time-invariant variables is not allowed while it is allowed in random effects model. Since no time-invariant variables exist in this study, the use of fixed effects model is of no disadvantage. It should also be noted that within estimator, which is the mostly preferred estimator of fixed effects model, is used to estimate the model since it prevents from dummy variable trap and multicollinearity problems. Assumptions of within estimator are as follows:

- 1)  $E(u_{it}|x_i, \mu_i) = 0$ , which implies that independent variables and cross-section effects are uncorrelated with the error term, i.e. strict exogeneity assumption. It should be noted that, even if in the existence of the correlation between  $x_{it}$ 's and cross-section effects, parameters can be consistently calculated in fixed effects model.

- 2)  $\text{rank} [\sum_{t=1}^T E(x'_{it}x_{it})] = K$ , which indicates that no multicollinearity exists between independent variables. In this study, the covariance matrix is used to test whether multicollinearity exists or not, as a result, the highest correlation in each data set is .68, which is between secondary enrollment rate and log of GDP per capita. According to Gujarati (2009), since the correlation does not exceed .80, it is not a serious threat.
- 3)  $E(u'_i u_i | x_i, \mu_i) = \sigma_u^2 I_t$ , which states that no heteroscedasticity and autocorrelation exist. In order to obtain standard errors that are robust to heteroscedasticity and serial correlation, “cluster” option is used in each regression.

Before estimating the basic model through fixed effects, I need to test whether models are two-way (including both cross-section effects and time effects) or one-way (including either cross-section effects or time effects) in each data set. To compare models, Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC) are used. Only the models with lowest BIC and AIC are taken into consideration. In case any conflict occurs between BIC and AIC, the model with the lowest BIC is preferred. In each model with four different data sets, one-way models with cross-section effects have both the lowest BIC and AIC or only the lowest BIC. The details of the results of BIC and AIC can be found in Appendix 10.4. Hence, the main model used in this study is as follows:

$$\begin{aligned}
 \text{democracy}_{it} &= \beta_0 + \beta_1 \ln \text{gdppercapita}_{it} + \beta_2 \text{trade}_{it} + \beta_3 \text{taxrevenue}_{it} \\
 &+ \beta_4 \text{secenroll}_{it} + \beta_5 \text{unrest}_{it} + \mu_i + u_{it}
 \end{aligned} \tag{1}$$

where democracy variable represents democracy values in each data sets: Freedom House, Polity IV, V-Dem, and Vanhanen Democracy Index.  $\ln \text{gdppercapita}$  is log of GDP per capita, trade is trade, taxrevenue is tax revenue, secenroll is secondary enrollment rate,



and unrest is social unrest. In addition,  $\mu_i$  denotes cross-section effects, and  $u_{it}$  denotes the error term including all other unobservable shocks to democracy. Indices  $i$  and  $t$  respectively denote country and year.

VARIABLES	(1) FH5 fh	(2) FH10 fh
lngdppercapita	0.31552** (0.13193)	0.49289** (0.19572)
taxrevenue	-0.00535 (0.00900)	-0.03991 (0.03956)
trade	0.00130 (0.00367)	0.00432 (0.00424)
secenroll	-0.78554 (0.62588)	-1.63640** (0.67941)
unrest	-0.11207 (0.18570)	-0.33072 (0.37965)
Constant	1.46420 (0.94889)	1.21576 (1.14807)
Observations	128	74
R-squared	0.05752	0.16881
Number of country	30	30
Country FE	Yes	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 1.** FE results by using Freedom House data set, five-year and ten-year averages

VARIABLES	(1) Polity5 polity2	(2) Polity10 polity2
lngdppercapita	1.25470* (0.70634)	1.68092* (0.89650)
taxrevenue	0.01884* (0.01058)	-0.04176 (0.13074)
trade	0.01467 (0.02689)	0.02386 (0.02906)
secenroll	8.57013** (3.34499)	6.40104 (4.48192)
unrest	0.14155 (1.01786)	-0.93937 (1.51453)
Constant	-20.15540*** (5.04445)	-20.29156*** (5.47423)
Observations	131	85
R-squared	0.34526	0.40156
Number of country	28	28
Country FE	Yes	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 2.** FE results by using Polity IV data set, five-year and ten-year averages

VARIABLES	(1)	(2)	(3)	(4)	(5)
	VDem5I	VDem5II	VDem5III	VDem5IV	VDem5V
	elecDEM	libDEM	partipDEM	delibDEM	egalDEM
lnGDPpercapita	0.05520*** (0.01883)	0.04875** (0.01912)	0.03992** (0.01559)	0.05525** (0.02303)	0.03421** (0.01329)
taxrevenue	-0.00002 (0.00039)	0.00002 (0.00033)	-0.00027 (0.00029)	0.00004 (0.00044)	0.00012 (0.00025)
trade	0.00060 (0.00055)	0.00052 (0.00039)	0.00054 (0.00046)	0.00047 (0.00054)	0.00043 (0.00036)
seceenroll	0.13436 (0.10484)	0.07394 (0.09257)	0.03758 (0.07440)	0.14614 (0.11414)	0.07783 (0.05693)
unrest	0.00871 (0.03100)	0.00868 (0.02346)	0.00360 (0.02136)	0.03499 (0.03019)	0.01537 (0.01822)
Constant	-0.23970 (0.14148)	-0.24679* (0.13222)	-0.19486* (0.11073)	-0.37163** (0.17320)	-0.12318 (0.10321)
Observations	131	131	131	131	131
R-squared	0.31200	0.28493	0.26983	0.27745	0.29061
Number of country	28	28	28	28	28
Country FE	Yes	Yes	Yes	Yes	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 3.** FE results by using V-Dem data set, five-year average

VARIABLES	(1)	(2)	(3)	(4)	(5)
	VDem10I	VDem10II	VDem10III	VDem10IV	VDem10V
	elecDEM	libDEM	partipDEM	delibDEM	egalDEM
lngdppercapita	0.06359*** (0.02041)	0.05314** (0.01952)	0.04652*** (0.01557)	0.06001** (0.02501)	0.03886** (0.01413)
taxrevenue	-0.00458 (0.00488)	-0.00305 (0.00454)	-0.00379 (0.00386)	-0.00421 (0.00609)	-0.00209 (0.00346)
trade	0.00127* (0.00066)	0.00115** (0.00051)	0.00105** (0.00047)	0.00119* (0.00069)	0.00089** (0.00041)
secenroll	0.09803 (0.08760)	0.05619 (0.07288)	0.00449 (0.06747)	0.12185 (0.10116)	0.06117 (0.05263)
unrest	-0.03245 (0.03496)	-0.03433 (0.02661)	-0.02907 (0.02581)	-0.01484 (0.04215)	-0.01016 (0.01821)
Constant	-0.22430* (0.12757)	-0.24115** (0.11235)	-0.18122* (0.09422)	-0.34685** (0.15780)	-0.12868 (0.08764)
Observations	85	85	85	85	85
R-squared	0.40457	0.35442	0.36487	0.33018	0.34445
Number of country	28	28	28	28	28
Country FE	Yes	Yes	Yes	Yes	Yes

YES

Robust standard errors in parentheses

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

Table 6. 4. FE results by using V-Dem data set, ten-year average

VARIABLES	(1) V5 vandem	(2) V10 vandem
lngdppercapita	2.36729* (1.20591)	3.68014*** (1.02293)
taxrevenue	0.00102 (0.01139)	-0.00129 (0.19053)
trade	0.01667 (0.02461)	0.03273 (0.03036)
secenroll	8.91389** (3.43050)	5.40191 (3.57489)
unrest	0.10412 (1.60361)	0.21656 (1.98279)
Constant	-19.72246*** (6.62123)	-27.09862*** (4.25128)
Observations	137	88
R-squared	0.33519	0.50350
Number of country	29	29
Country FE	Yes	Yes

YES

Robust standard errors in parentheses

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

**Table 6.5.** FE results by using Vanhanen Democracy Index data set, five-year and ten-year averages

One-way fixed effects model, including only cross-section effects, is used to test the correlation between democracy and economic growth by using four different data sets (Freedom House, Polity IV, V-Dem, and Vanhanen Democracy Index) with five-year and ten-year averages. In each model, a positive correlation between democracy and log of GDP per capita variables exist. Furthermore, log of GDP per capita variables are all statistically significant at different confidence intervals (%99, %95, or %90). Considering other variables; i.e. tax revenue, trade, secondary enrollment rate, and social unrest, their signs are either negative or positive. When excluding the variables confirming the

hypothesis and log of GDP per capita, none of the remaining variables have both positive signs and are statistically significant in data sets, exceptionally, in V-Dem data set (ten-year average) trade variables are statistically significant in each regression, with five different democracy variables. In addition,  $\rho$  value which represents the variance due to differences across panels is minimum .82 and maximum .89 given the results. Hence, it indicates the importance of cross-section effects in the basic model. Given  $R^2$  values, the minimum value of  $R^2$  is .06 while the maximum value of it is .50. Considering the expected signs of each variable; i.e. positive, in the study, I should note that according to results of the model with Polity IV (five-year and ten-year averages), V-Dem (five-year average: with democracy variables “libdem”, “delibdem”, and “egaldem”), and Vanhanen Democracy Index (five-year average) data sets, signs of all variables are positive; thus results are as expected.

As mentioned in the previous paragraph, all log of GDP per capita variables have positive signs and are statistically significant; however, their coefficients are very different from each other given the results. Different scales in the democracy indexes, that are explained in part 3.5. Comparison of Data Sets, are more likely to be the main reason for this difference since the main disintegration between data sets are democracy variables that are from different sources. In addition to differences in scales, examining the correlation between democracy variables can be reasonable. According to the result of the covariance matrix, in the Appendix 10.5., pairwise correlations of democracy variables are high in each case, more than %50, except the correlation between vandem and fh. Since these variables are highly correlated, differences in coefficients can be explained by the uncorrelated parts. Also, because data sets cover different time periods, calculating

five-year and ten-year averages of the variables in these data sets may change the results, i.e. coefficients of the variables.

## 6. 2. Results of the Basic Model with Lagged Independent Variables

By replacing independent variables with lagged ones, one period past level of each independent variable is taken into account in the new model. To be more obvious, since democracy is a variable that can be affected by relevant variables (i.e. explanatory variables) with delay, estimating the model where one lag of independent variables are used may yield better outcomes. However, when lagged variables are included in the regressions with five-year and ten-year averages data sets, the results are not estimated because the number of observations decrease to an extent that the command does not function. Therefore, rather than these data sets, the original one, without averages, and fixed effects within estimator are used in the estimation process.

Hence, accordingly the model is as follows:

$$\begin{aligned}
 democracy_{it} = & \beta_0 + \beta_1 \ln gdp\text{percapita}_{i,t-1} + \beta_2 \text{trade}_{i,t-1} + \beta_3 \text{taxrevenue}_{i,t-1} \\
 & + \beta_4 \text{secenroll}_{i,t-1} + \beta_5 \text{unrest}_{i,t-1} + \mu_i + u_{i,t-1}
 \end{aligned} \tag{2}$$

The estimation results of the above model by using four different data sets are as follows:

VARIABLES	(1) FH fh
L.lngdppercapita	0.24551* (0.13072)
L.taxrevenue	-0.00411 (0.00273)
L.trade	0.00379 (0.00315)
L.secenroll	-0.73721 (0.63811)
L.unrest	-0.02171 (0.08554)
Constant	1.63734* (0.84117)
Observations	412
Number of country	29
R-squared	0.02917
Country FE	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 6.** FE results with lagged independent variables by using Freedom House data set



VARIABLES	(1) Polity2 polity2
L.lngdppercapita	-0.00294 (0.90214)
L.taxrevenue	0.01445* (0.00820)
L.trade	-0.00464 (0.01925)
L.secenroll	13.44790*** (3.68671)
L.unrest	-0.24634 (0.56646)
Constant	-13.91359** (5.74587)
Observations	394
Number of country	27
R-squared	0.24136
Country FE	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 7.** FE results with lagged independent variables by using Polity IV data set

VARIABLES	(1) VDemI elecdem	(2) VDemII libdem	(3) VDemIII partipdem	(4) VDemIV delibdem	(5) VDemV egaldem
L.lngdppercapita	0.03325* (0.01750)	0.03191** (0.01529)	0.02454* (0.01201)	0.03666 (0.02234)	0.02230** (0.01081)
L.taxrevenue	-0.00003 (0.00030)	-0.00011 (0.00024)	-0.00016 (0.00020)	-0.00004 (0.00034)	-0.00007 (0.00019)
L.trade	0.00045 (0.00047)	0.00026 (0.00033)	0.00036 (0.00038)	0.00041 (0.00051)	0.00035 (0.00029)
L.secenroll	0.19555 (0.14494)	0.10690 (0.12987)	0.07701 (0.09042)	0.17867 (0.16661)	0.10707 (0.08278)
L.unrest	0.00638 (0.01604)	0.01328 (0.01300)	0.00934 (0.00896)	0.01578 (0.01867)	0.01215 (0.01008)
Constant	-0.13827 (0.12889)	-0.14719 (0.11184)	-0.11798 (0.10235)	-0.26794 (0.16613)	-0.06328 (0.09318)
Observations	392	392	392	392	392
R-squared	0.20449	0.18335	0.16607	0.18449	0.21582
Number of country	28	28	28	28	28
Country FE	Yes	Yes	Yes	Yes	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 8.** FE results with lagged independent variables by using V-Dem data set

VARIABLES	(1) V vandem
L.lngdppercapita	0.88466 (1.13829)
L.taxrevenue	-0.00270 (0.00901)
L.trade	0.00495 (0.01480)
L.secenroll	10.52318*** (2.77635)
L.unrest	-0.23472 (0.54956)
Constant	-9.63935 (7.43175)
Observations	418
Number of country	29
R-squared	0.15613
Country FE	Yes

YES

Robust standard errors in parentheses

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

**Table 6. 9.** FE results with lagged independent variables by using Vanhanen Democracy Index data set

According to the results, the signs of log of GDP per capita are positive in the data sets except Polity IV, while they are positive in each data set regarding the results with the basic model. Considering whether these variables are statistically significant or not, they are significant in Freedom House, and V-Dem (excluding “delibdem” as a measure of democracy), while they are significant in all data sets given the results with the basic model. Coefficients of log of GDP per capita considerably decrease in all data sets when compared to the results with the basic model. Signs of lagged explanatory variables are either positive or negative. Given  $R^2$  and  $\rho$  values, while the maximum value of  $R^2$  is 0.24, minimum of it is 0.03;  $\rho$  is maximum 0.88, minimum 0.77. While  $R^2$  values decrease,  $\rho$

values increase in general compared to the results of the basic model. It should also be added that, the results do not completely match the hypothesis. However, the results of the basic model are as expected.

I will decide between the model with lagged independent variables and the basic model. As in deciding the basic model, AIC and BIC are used to make the decision between the models. According to the results, in Appendix 10.6., it is clear that the results without lags and with five and ten-year averaged data sets yield lower AIC and BIC values with the data sets Freedom House, Polity IV, and Vanhanen Democracy Index, which implies that the basic model fits better. However, with V-Dem data set, the model with lagged independent variables produces better results, which is interesting because log of GDP per capita variables are more statistically significant in general in the basic model. Hence, the results of the basic model match the hypothesis more. In addition, since V-Dem is a comparatively advantageous data set in many respects, I would expect that the results with V-Dem are more likely to correspond the expected results. Nevertheless, it should be stated that not much difference exists between the results of the basic model and the model with lagged independent variables when V-Dem data set is used.

## **CHAPTER VII**

### **A KEY HISTORICAL FACTOR EXPLAINING THE HETEROGENEITY**

Given the empirical results, it is obvious that heterogeneity is very high among Muslim-majority countries. Even though some possible channels are stated in explaining the heterogeneity thereby low levels of development, in Related Literature part, I want to attract the attention to a more significant concept that is colonialism.

According to Nasr (n.d.), “Islam, ethnic identity, social characteristics, and other indigenous religious and cultural factors” can explain commonalities in Muslim countries, while “economics, ideology, and leadership” can explain differences in these countries. However, the concept of colonialism is the key in explaining both the commonalities and divergences in the Muslim world. The Dutch, the Germans, Spanish, Portuguese, and Russians have controlled Muslim territories: Indonesia, the Philippines, Malaysia, the Caucasus, and Central Asia. Contemporarily, Israel controls West Bank and Gaza Strip. The colonial process has maintained less than a century; however, it continuously altered “all aspects of geography, the economy, social relations, and politics” in the areas that are governed, thereby generating differences among colonized countries. Supportively, according to Acemoğlu et al. (2000), differences in institutions are the key in explaining large variety in income per capita across countries and differences in institutions can be resulted from differences in colonial experience. Accordingly, Europeans adopted very different type of strategies in colonization with different related institutions. They may

establish extractive institutions thereby damaging investment and economic progress, or rather they may establish inclusive institutions enforcing “the rule of law” and encouraging investment. Settlement decisions of Europeans are determined by mortality rates; when they faced with high mortality rates, they had more tendency to establish extractive institutions rather than going and settling. Finally, it is stated that the existence of these institutions maintained to the present. While seventeen Muslim-majority countries are included in the article, accordingly Mali, Gambia, and Guinea have the highest mortality estimates (respectively 2940, 1470, and 483) among Muslim-majority ones and low average protection against expropriation risk (respectively 4.00, 8.27, and 6.55), whereas in Canada, USA, Australia, and New Zealand mortality estimates are much lower (respectively 16.1, 15, 8.55, and 8.55) and average protections against expropriation risk (respectively 9.73, 10, 9.32, and 9.73) are higher. Relatedly, in the latter countries, “law and order, and private property” were existing during the early period of colonization as bases of the contemporarily inclusive institutions of these countries. Consequently, it is more likely that Europeans established extractive institutions in Mali, Gambia, and Guinea, and these institutions persisted to the present. Following Nasr (n.d.) and Acemoğlu et al. (2000), a further research can be carried out in this context by grounding colonialism.

## **CHAPTER VIII**

### **CONCLUSION**

In this study, the correlation between democracy and economic growth is examined for the years between 1960 and 2015, and for the Muslim-majority countries. The question of “Are richer countries more democratic?” is interesting in the context of Muslim-majority states since it is rarely studied for this group of countries. I have expected a positive correlation between democracy and economic growth considering the specified time interval and countries. In order to estimate the relation for two different models, fixed effects model, and within estimator are used. When comparing the results of the basic model and the model with lagged independent variables, except the data set V-Dem, in all data sets the basic model is preferred to the lagged one according to AIC and BIC results. However, including the results with V-Dem data set (when the lagged model is used), it is clear that empirical results support a positive correlation between democracy and economic growth and the effects are statistically significant.





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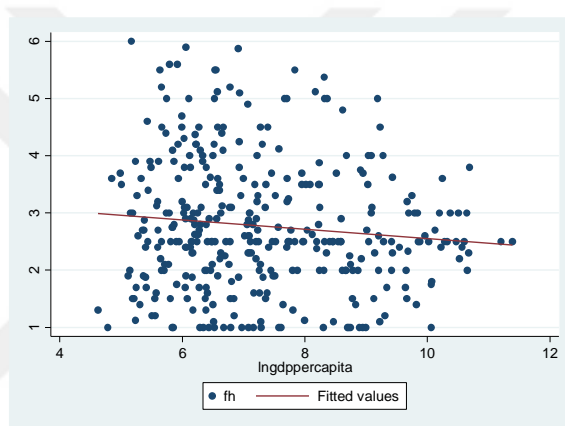




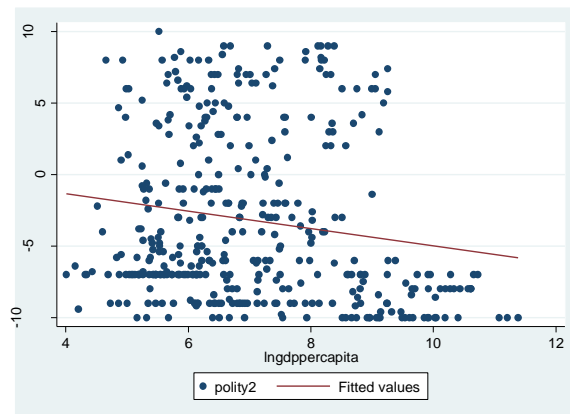
## APPENDIX

### 10. 1. Figures Indicating the Correlation between Democracy Variables and Log of GDP Per Capita

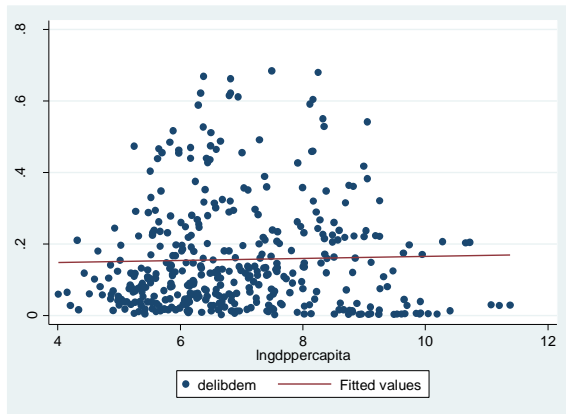
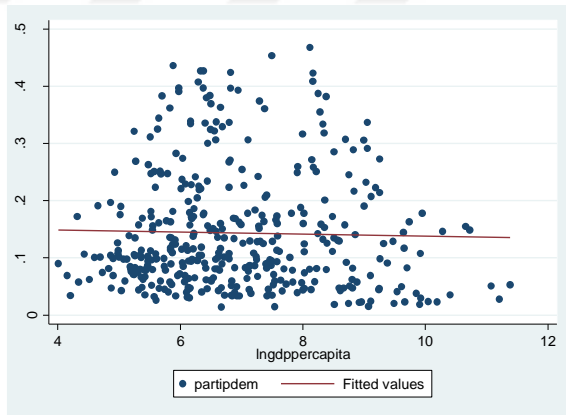
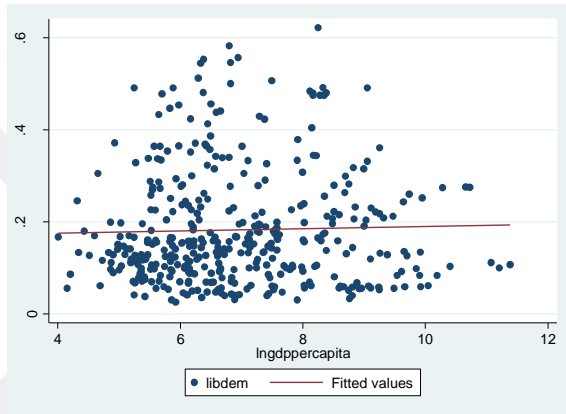
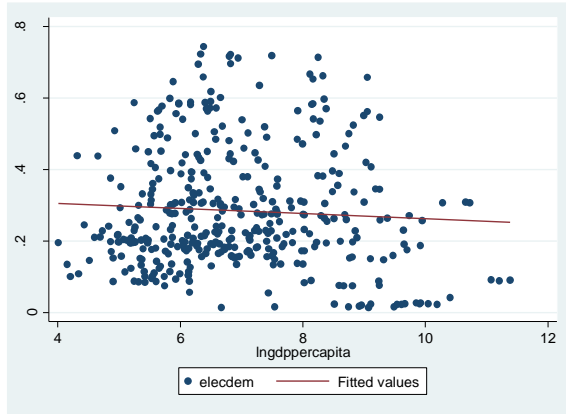
**Figure 10. 1.** The correlation between Freedom House democracy measure and log of GDP per capita

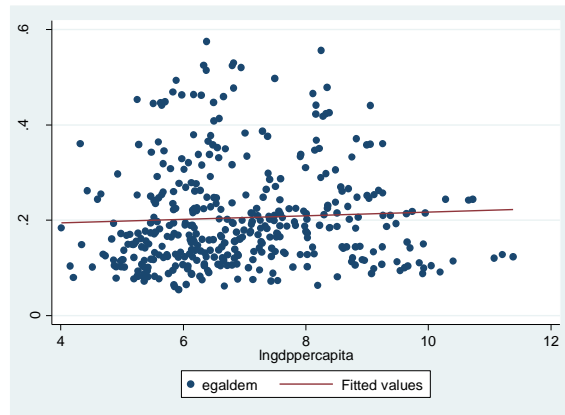


**Figure 10. 2.** The correlation between Polity IV democracy measure and log of GDP per capita

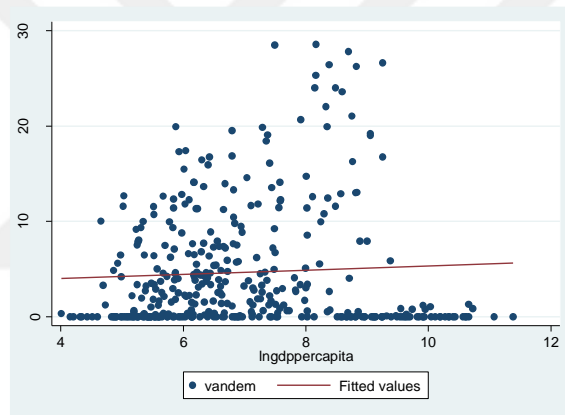


**Figure 10. 3.** The correlation between V-Dem democracy measures and log of GDP per capita





**Figure 10. 4.** The correlation between Vanhanen Democracy Index and log of GDP per capita



In Figures 1-4, correlations between democracy, which is represented by democracy variables from four different data sets, and economic growth, which is represented by log of GDP per capita, are drawn. I should note that only five-year average data sets are used in these figures. Scatterplot is used as the most useful display technique in comparing two quantitative variables (STAT 200, 2008). In addition, the line indicating fitted values of democracy variables and log of GDP per capita is added. Considering these lines, while the correlation is negative when Freedom House and Polity IV data sets are used to represent democracy variables, it is positive when V-Dem and Vanhanen Democracy Index data sets are used to represent democracy variables. However, as exceptions, the figures where V-Dem data set are used and democracy variables are represented by electoral democracy and participatory democracy offer a negative relation between democracy and economic growth.

## 10. 2. Variables and Sources

Descriptions of the Variables	Abbreviations of the Variables	Sources of the Variables
The average of the indexes Civil Liberties and Political Rights in Freedom House; a measure of democracy.	fh	Freedom House
Polity2 variable in Polity IV data set; a measure of democracy.	polity2	Polity IV project
Electoral democracy variable in V-Dem data set; a measure of democracy.	elecDEM	Varieties of Democracy (V-Dem)
Liberal democracy variable in V-Dem data set; a measure of democracy.	libDEM	Varieties of Democracy (V-Dem)
Participatory democracy variable in V-Dem data set; a measure of democracy.	partipDEM	Varieties of Democracy (V-Dem)
Deliberative democracy variable in V-Dem data set; a measure of democracy.	delibDEM	Varieties of Democracy (V-Dem)
Egalitarian democracy variable in V-Dem data set; a measure of democracy.	egaldem	Varieties of Democracy (V-Dem)
Vanhanen democracy index; a measure of democracy.	vandem	Vanhanen Democracy Index
Log of GDP per capita (current US dollars); a measure of economic growth.	lngdppercapita	World Development Indicators (WDI)
Tax revenue (% of GDP); a measure of tax revenue.	taxrevenue	World Development Indicators (WDI)
Trade (% of GDP); a measure of trade.	trade	World Development Indicators (WDI)
School enrollment; secondary (gross), gender parity index (GPI); a measure of secondary enrollment rate.	secenroll	World Development Indicators (WDI)
Social unrest, dummy variable taking values 0 or 1; a measure of social unrest.	unrest	Acemoğlu et al. (2014)

**Table 10. 1.** Variables in the data sets and their sources

Also, note that whether countries in the world is of Muslim-majority or not is determined by using the table in Pew Research Center (n.d.).

### 10. 3. Summary Statistics of Variables by Using Four Data Sets

VARIABLES	FH5			FH10						
	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) N	(7) mean	(8) sd	(9) min	(10) max
fh	384	2.712	1.173	1	6	220	2.738	1.153	1	5.875
lngdppercapita	358	7.297	1.488	4.624	11.39	208	7.367	1.481	4.787	11.39
trade	351	76.00	40.95	0.523	367.0	204	77.80	42.42	15.22	367.0
taxrevenue	165	14.29	10.35	0.287	108.0	103	13.80	8.745	0.287	67.51
secenroll	318	0.758	0.264	0	1.236	190	0.767	0.258	0.102	1.136
unrest	329	0.281	0.327	0	1	166	0.278	0.284	0	1

**Table 10. 2.** Summary statistics of democracy measures from Freedom House data sets, five-year and ten-year

averages

VARIABLES	P5					P10				
	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) N	(7) mean	(8) sd	(9) min	(10) max
polity2	462	-3.473	5.734	-10	10	235	-3.464	5.621	-10	9.100
lngdppercapita	432	7.097	1.572	4.008	11.38	226	7.083	1.572	4.008	11.35
trade	418	70.95	38.36	4.297	310.6	219	71.60	36.84	9.819	226.4
taxrevenue	166	15.24	16.36	0.0558	203.5	96	14.48	8.934	0.295	67.51
secenroll	342	0.751	0.266	0.0943	1.236	191	0.753	0.263	0.0943	1.143
unrest	420	0.289	0.334	0	1	237	0.281	0.316	0	1

**Table 10. 3.** Summary statistics of democracy measures from Polity IV data sets, five-year and ten-year averages

VARIABLES	V-Dem5				V-Dem10					
	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) N	(7) mean	(8) sd	(9) min	(10) max
elecdem	462	0.268	0.163	0.0139	0.744	231	0.268	0.160	0.0141	0.722
libdem	462	0.170	0.121	0.0251	0.621	231	0.170	0.118	0.0276	0.561
partidem	462	0.133	0.0998	0.0115	0.468	231	0.133	0.0980	0.0129	0.430
delibdem	462	0.141	0.148	0.00145	0.684	231	0.141	0.144	0.00154	0.673
egaldem	462	0.194	0.106	0.0331	0.575	231	0.195	0.104	0.0360	0.527
lngdppercapita	432	7.097	1.572	4.008	11.38	226	7.083	1.572	4.008	11.35
trade	418	70.95	38.36	4.297	310.6	219	71.60	36.84	9.819	226.4
taxrevenue	166	15.24	16.36	0.0558	203.5	96	14.48	8.934	0.295	67.51
seceenroll	342	0.751	0.266	0.0943	1.236	191	0.753	0.263	0.0943	1.143
unrest	420	0.289	0.334	0	1	237	0.281	0.316	0	1

**Table 10. 4.** Summary statistics of democracy measures from V-Dem data sets, five-year and ten-year averages

VARIABLES	V5					V10				
	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) N	(7) mean	(8) sd	(9) min	(10) max
vandern	436	4.258	6.202	0	28.56	243	4.853	6.514	0	28.56
lngdppercapita	390	6.994	1.557	4.008	11.38	226	7.084	1.575	4.008	11.38
trade	380	70.61	38.68	4.297	310.6	219	71.83	36.92	9.819	226.4
taxrevenue	153	15.32	16.98	0.354	203.5	96	14.49	8.932	0.354	67.51
secenroll	323	0.740	0.268	0.0943	1.236	191	0.752	0.262	0.0943	1.143
unrest	420	0.289	0.334	0	1	237	0.281	0.316	0	1

**Table 10. 5.** Summary statistics of democracy measures from Vanhanen Democracy Index data sets, five-year and ten-year averages

Note that Tables 1-4 show the summary statistics of variables used in four data sets including five-year and ten-year averages.

#### 10. 4. AIC and BIC Results I



Name of the data sets	Type of effects	AIC	BIC
Freedom House (five-year average)	Cross-section and time effects	196.14	230.36
	Cross-section effects	194.60	208.86
	Time effects	366.36	380.62
Freedom House (ten-year average)	Cross-section and time effects	86.85	105.28
	Cross-section effects	87.56	99.08
	Time effects	208.01	214.93
Polity IV (five-year average)	Cross-section and time effects	613.75	651.12
	Cross-section effects	617.53	631.91
	Time effects	784.07	798.45
Polity IV (ten-year average)	Cross-section and time effects	390.64	412.62
	Cross-section effects	388.79	401.01
	Time effects	520.24	530.01
V-Dem (five-year average)	Cross-section and time effects	-304.38	-267.00
(Note that democracy variable is "elecDEM")	Cross-section effects	-297.81	-283.43
	Time effects	-139.84	-125.46
V-Dem (five-year average)	Cross-section and time effects	-343.23	-305.85
(Note that democracy variable is "libDEM")	Cross-section effects	-342.42	-328.04
	Time effects	-194.14	-179.76

V-Dem (five-year average)	Cross-section and time effects	-404.22	-366.84
(Note that democracy variable is "partidem")	Cross-section effects	-397.55	-383.17
	Time effects	-248.73	-234.36
V-Dem (five-year average)	Cross-section and time effects	-270.78	-233.40
(Note that democracy variable is "delibdem")	Cross-section effects	-270.94	-256.56
	Time effects	-135.67	-121.29
V-Dem (five-year average)	Cross-section and time effects	-404.99	-367.61
(Note that democracy variable is "egldem")	Cross-section effects	-409.29	-394.91
	Time effects	-219.48	-205.10
V-Dem (ten-year average)	Cross-section and time effects	-204.81	-182.83
(Note that democracy variable is "elecDEM")	Cross-section effects	-201.98	-189.77
	Time effects	-88.72	-78.95
V-Dem (ten-year average)	Cross-section and time effects	-222.15	-200.17
(Note that democracy variable is "libdem")	Cross-section effects	-222.39	-210.17
	Time effects	-121.29	-111.52
V-Dem (ten-year average)	Cross-section and time effects	-267.75	-245.77

(Note that democracy variable is "partidem")	Cross-section effects	-263.33	-251.12
	Time effects	-157.49	-147.72
V-Dem (ten-year average)	Cross-section and time effects	-177.20	-155.21
(Note that democracy variable is "delibdem")	Cross-section effects	-178.09	-165.88
	Time effects	-86.20	-76.43
V-Dem (ten-year average)	Cross-section and time effects	-262.20	-240.22
(Note that democracy variable is "egalidem")	Cross-section effects	-264.60	-252.39
	Time effects	-140.71	-130.94
Vanhanen Democracy Index (five-year average)	Cross-section and time effects	728.04	766.00
	Cross-section effects	734.03	748.63
	Time effects	896.24	910.84
Vanhanen Democracy Index (ten-year average)	Cross-section and time effects	436.20	458.49
	Cross-section effects	443.22	455.61
	Time effects	581.49	591.40

**Table 10. 6.** AIC and BIC results to decide whether the basic model is one-way or two-way

In this table, whether the basic model is one-way (i.e. including either cross-section or time effects) or two-way (i.e. including both cross-section and time effects) is searched by using information criteria, in particular, AIC and BIC. In all data sets, the model including only cross-section effects yields the lowest values, the ones that are red written. (Note that BIC is taken into account when a conflict occurs between AIC and BIC in determining the lowest values.) Hence, it is concluded that the basic model is one-way, including only cross-section effects.

## 10. 5. The Correlation Matrix

	fh	polity2	elecdem	libdem	partipdem	delibdem	egaldem	vandem
fh	1							
polity2	.7070953	1						
elecdem	.7550305	.78474582	1					
libdem	.78643309	.72790309	.91012568	1				
partipdem	.76263515	.78490085	.94445788	.93140951	1			
delibdem	.72449102	.72056122	.93500668	.94038884	.93450533	1		
egaldem	.69604155	.63046545	.87862405	.883305	.86624557	.89385712	1	
vandem	.4814905	.70246437	.65833757	.55553024	.61006724	.59498143	.52769052	1

**Table 10. 7.** The correlation matrix of democracy variables in four data sets

According to the table, each pairwise correlation of democracy variables is more than 50%, except the correlation between vandem and fh.

## 10. 6. AIC and BIC Results II

Name of the data sets	Presence of lagged independent variables	AIC	BIC
Freedom House (no averages)	Yes	758.46	778.57
Freedom House (five-year average)	No	194.6	208.86
Freedom House (ten-year average)	No	87.56	99.08
Polity IV (no averages)	Yes	1953.94	1973.82
Polity IV (five-year average)	No	617.53	631.91
Polity IV (ten-year average)	No	388.79	401.01
V-Dem (no averages)	Yes	-870.99	-851.14

V-Dem (five-year average)	No	-297.81	-283.43
V-Dem (ten-year average)	No	-201.98	-189.77
(Note that democracy variable is "elecDEM")			
V-Dem (no averages)	Yes	-1068.3	-1048.5
V-Dem (five-year average)	No	-342.42	-328.04
V-Dem (ten-year average)	No	-222.39	-210.17
(Note that democracy variable is "libDEM")			
V-Dem (no averages)	Yes	-1221.6	-1201.8
V-Dem (five-year average)	No	-397.55	-383.17
V-Dem (ten-year average)	No	-263.33	-251.12
(Note that democracy variable is "partipDEM")			
V-Dem (no averages)	Yes	-819.72	-799.86
V-Dem (five-year average)	No	-270.94	-256.56

V-Dem (ten-year average)	No	-178.09	-165.88
(Note that democracy variable is "delibdem")			
V-Dem (no averages)	Yes	-1270	-1250.1
V-Dem (five-year average)	No	-409.29	-394.91
V-Dem (ten-year average)	No	-264.6	-252.39
(Note that democracy variable is "egaldem")			
Vanhanen Democracy Index (no averages)	Yes	2301.49	2321.66
Vanhanen Democracy Index (five-year average)	No	734.03	748.63
Vanhanen Democracy Index (ten-year average)	No	443.22	455.61

**Table 10. 8.** AIC and BIC results to decide between the basic model and the model with lagged independent variables

According to the table above, whether the basic model or the model with lagged independent variables fits better is measured. Four different democracy variables and three different data sets, the original one (without averages), five-year averaged one, and ten-year averaged one, are used. The basic model is estimated by using the original data set, while the model with lagged independent variables is estimated by using five and ten-year averages data sets. As a result, the values are lower, red written ones, when lagged independent variables (and averaged data sets) are used except the values when V-Dem data sets are used.