

Democracy and Development: Causality Analysis Using fsQCA

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Abstract

Since the industrial revolution, development has been at the center of politics and politics at the center of development. Whether democratic type of government or autocratic perform better has been discussed among economists and political scientists alike for years. The emergence of autocratic governments in South East Asia as champions in bringing fast growth has fueled the debate even more. Many dictatorships have made the success of these countries as a tool to question the attributes of democracy and in return legitimize their grip. Even though, democracy has its own merit irrespective of whether it brings fast growth or not, it is still a worthy cause to learn about its effectiveness more. Development and poverty alleviation have been the allure to my choice in studying Economics and my motivation to pursue my thesis in a subject that has been always closer to my heart.

Does democracy promote economic development? I review recent attempts to address this question. There is no consensus among economists, policy makers and political scientists as to how democratic properties of a regime in a country can bring a fast economic growth. Their answers are dependent on the methodology, definitions of democracy and development and data set taken. I discussed the concept of democracy, the channels of growth that it can affect and then forwarded the empirical findings

Moreover, I have used in my empirical analysis fuzzy set qualitative comparative analysis [fsQCA], a rather fresh method of understanding causality and finding various paths to arrive at an outcome rather than solitary way propagated by other conventional methods. I included as many countries as possible so that many consistent paths of arriving at the outcome of development can be identified.

The findings of my thesis positively indicate that one country can have a democracy in combination of different conditions in distinction to others, and achieve development.

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1. Introduction

1.1. Introduction

There is a long sustained curiosity among economists and political scientists whether democracy promotes economic development and economic development brings democratic transition. There is a wide array of studies that has reported that there is positive association between the two while others have found that if there is any it is a negative relationship. The major differences arise from the difference in the formation of the theories, the amount and quality used and the research methodology.

As a citizen of a country that is in struggle of figuring out how and using which policy approaches to come out of poverty and most of its history under different kinds of dictatorship, the question of the relationship between democracy and development is always at the head of public discussion and it was also the forefront of my decision to pursue the study of economics and hence also my main motivation for my research hypothesis. By choosing and doing a research on the problem, it was my hope that I will learn more about it.

1.2. Hypothesis

One hypothesis about the relationship between democracy and economic growth is that its lack of it in one country leads to a higher economic growth than its democratic counterpart. This hypothesis has been considered as valid because of the fast growth countries in South East Asia have exhibited. Amongst many, Amartya Sen has called this hypothesis the "*Lee-thesis*" [Sen, 1999], after the late Singaporean Prime Minister, Lee Kuan Yew, who unequivocally voiced this outlook. However, a survey of the literature on the topic makes it clear that many alternative hypotheses with different degrees that can be proposed about the relationship between development and democracy. My hypothesis is democracy can also lead to development and there is no exclusivity to dictatorship when it comes to achieve higher economic growth.

1.3. Research question and design

Due to the importance of governments and their form of institutional organization in bringing in economic development, different economists have made many discussions on whether the effect is positive or negative.

Among the studies and observations carried after the Second World War, many have come with different and sometimes very contradictory empirical result on the role democracy plays in economic development. There are arrays of studies that support either a democratic form of government or equally authoritative type of government. Most previous work uses cross-sectional regression analysis to investigate the causal relationship between democracy and development.

In my thesis, I will revisit these and examine the empirical relationship between this important issue of whether democracy brings economic development by using rather recent methodology, the fuzzy set qualitative comparative analysis [fsQCA], a method of analyzing causality which I found has not been used in many of the literature I reviewed and which is still seldom used in economic research papers in general.

1.4. Approach, Methodology and contribution

My main focus will be to assess the effect of democracy on the trend of economic development over a period of time rather than on the economic development that arises as a result of dynamic change in type of governments, transitional crisis or external shocks. In keeping with this approach, I will analyze a panel data of countries using fsQCA to find if there is evidence that supports my claim that democracy can also foster economic development and what channels it uses.

I will use as many countries in the world as possible of which there is a full data set in the period from 2000 to 2013 consisting of 156 countries. The data is mostly made up from aggregated variables at country level from various data of the World Bank, UNDP's Human Development Index, Freedom House Political Rights Index, Barro-Lee data set on education attainment and

Heritage Foundation Index of Economic Freedom. The data is calibrated so as to be used for fsQCA analysis. Chapter Four will comprehensively go through the various variables, source and way of calibration in addition to the analysis of the result.

My method of analysis will differentiate itself from the literature in some aspects. However, aside from the elements that arise from the novelty of my approach in using fsQCA to investigate the causality with all its advantages, shortcomings and unfamiliarity, this thesis draws heavily on the political and economic literature of aggregate effects of democracy on economic development both directly and indirectly through other channels. Certain aspects of the relationship cannot be addressed using only the conventional statistical tools. It has to be explored with new approaches and methods when they are available. This will give more understanding of the subject matter and more robust and significant results can be obtained as a result. The trepidation around the comparative value of measurable versus qualitative data echoes a bigger discussion over the comparative usefulness of science in analyzing a situation. Omitting qualitative data like state of democracy in one country would be to neglect from considering an entire body of knowledge.

The complementary nature of a statistical analysis and a case study encourages one to explore other popular methods used dominantly in other social sciences. This will enable one to draw generalizations of a causal effect, simultaneously gaining rigorous understanding of the instruments and procedures behind this causal effect, or possibly the absence of any. Because of the lack of robustness in statistical research on correlation between democracy and development, and the resulting differences in the findings, it is fruitful to add and try other strategies in order to come closer to the actual nature of the relationship. Yet, the full clarification of the relationship cannot be achieved solely through this thesis, mainly because of the still early development of the method. Nonetheless, it is my hope that it will provide an important supplement to the discussion.

1.5. Outline of the thesis

This thesis consists of a total of five chapters. Chapter Two gives a synopsis of the current theoretic and empirical research on the field. It emphasizes on the literature on development and democracy and gives a concise presentation of the most significant contributions and central findings in relation to the nature of the democracy-development connection. It gives the theoretical framework, drawing on concept of different economic and democracy determinants. Democracy's components like elections, political rights and civil liberties and its effect on accountability, stability [or instability], human capital and special interest groups will be discussed. It also highlights important empirical contributions in theorizing democracy, as well as important findings on democracy's consequence on economic growth and the provision of public goods. Chapter Three frameworks the research method. The advantage of fsQCA to other conventional statistical methods, tools of analyses, interpretations and notations will be explained. Whilst, Chapter Four provides formalization of the data, variables and concepts used in this thesis and it presents the analysis and results from the study. Lastly, Chapter Five recaps the most critical findings and draw conclusions from this thesis, as well as recommending areas for further exploration.

2. Democracy and Development :

Literature Review

2.1. Background

Academic works done on political, social, and economic development has grown rapidly in recent years. Economists, political scientists, and sociologists altogether have made this region of research one of the most vigorous and productive in the social sciences. The literature on democracy and development methodically integrates principles of political science and economics into a sole research schema so that to get an understanding of the interaction between politics and economics, particularly, on the relationship between democracy and economic performance.

Many research results have tried to analytically find in what way democracy or form of government in general constitute the political foundation of economic management and affect not only economic development, but also the economic elements of growth, such as inflation, investment, human capital, income disparity, property rights, and population growth. My literature review discourses theoretic and empirical findings in both the direct and indirect effects on economic growth of democracy. Democracy has been both extolled as an instrument for contentment and prosperity, and imputed for hindering capital formation and the long-term growth of countries.

2.2. Definition & Measurement of Key Concepts

2.2.1. Defining Democracy

Defining democracy has not been an easy undertaking. Many governments, scholars and individuals have come with different definitions sometimes to the point that it is beyond recognizable compared to the consensus of its meaning. Even countries like North Korea put in their official name the word democratic and go even further to claim that they are the true democracy.

Keeping that absurdity aside, democracy, in my thesis, if not Abraham Lincoln's famous definition, "*democracy is a government of the people, by the*

people, and for the people", it is meant to be the more theoretically defined meaning of it. When examining the notion of democracy, it might be important to start with bearing in mind whether democracy is defined institutionally or substantively as this has ramifications also for the other important matters raised concerning dichotomous versus continuous definition [of democracy], the limitations of the democracy concept and the its logical structure.

Democracy is defined by Schumpeter [1947], at the forefront of institutional definition, as "*...the institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote*". This is a *minimalist* or *thin* and procedural definition of democracy. Lately, Adam Przeworski and colleagues have debated strongly in favor of a minimalist, institutionally based democracy definition [2000]. They, for example, define democracy simply as a political regime in which "*those who govern are selected through contested elections*". The benefits of minimalist, institutional definitions are analytical rigor and accuracy, which alleviate ensuing difficulties of operationalizing democracy for empirical research [Przeworski et al., 2000]. Thus, perhaps the paramount case for outlining democracy institutionally is the demand to move beyond intuition towards stringent empirical measurement; a minimalist theoretical explanation is pondered interesting somewhat because it is easy to operationalize.

Meanwhile, many arguments denote elections alone are inadequate for securing democracy, even when contested elections are the key criterion. One needs extra institutional guarantees, and the democracy definition needs to be broadened. Hence, at the opposite end of the scale is the *broader* or *thick* concept of democracy, which includes a wide range of features for a country to qualify as democratic. Diamond [1996] promotes the concept of liberal democracy, and argues that a regime must support political participation through other means than solely elections. He argues that for a country to be democratic, it must hold free and fair elections with universal adult suffrage, as well as boosting the importance of democratic institutions, such as the system of checks and balances, upholding a rule of law, the rights of citizens to information, to assembly, to speech etc.

The most influential academic definition is that of by Dahl's concept of polyarchy [Dahl, 1971]. Polyarchy has eight components, or institutional requirements: almost all adult citizens have the right to vote; almost all adult citizens are eligible for public office; political leaders have the right to compete for votes; elections are free and fair; all citizens are free to form and join political parties and other organizations; all citizens are free to express themselves on all political issues; diverse sources of information about politics exist and are protected by law; and government policies depend on votes and other expressions of preference.

Przeworski, Alvarez, Cheibub & Limongi [2000], however, disagree strongly with Dahl, and argue that concepts such as "accountability", "responsiveness", "responsibility" and "participation" should not be included in a definition of democracy as such. They believe that "the question whether or not regimes characterized by freedom of opinion, widespread participation, and repeated elections are in fact responsive is best left open for investigation, rather than resolved by definition" [Przeworski et al. 2000]. Instead, Przeworski [1991] propose another minimalist definition where democracy is "*a system in which parties lose elections*"

Yet, these lists of institutional requirements do not recognize what democracy is, but rather identify vital rudiments of what a working democracy needs. Substantive democracy definitions take the public's role in political decision making as point of departure, rather than specific institutions. One prominent proponent of substantive democracy definitions is David Beetham [1994, 1999]. He argues that definitions that consider democracy merely as a matrix of various institutions and rights are problematic. The persistent question is why specific institutions and rights are considered democratic? How can we answer that question without invoking a redundant argument? Accordingly, Beetham claims that "*the core idea of democracy is that of popular rule or popular control over collective decision making*" [Beetham 1999], and he furthermore adds political equality as a second criterion. Schmitter and Karl [1991] also argue "*Democracy is a system of governance in which rulers are held accountable for their actions in the public realm by citizens, acting indirectly through the competition and cooperation of their elected representatives.*"

2.2.2. Measuring Democracy

The first challenge facing a quantitative analysis of the patterns of democracy is to develop reliable and informative measures. Many types of measuring democracy, beyond the mere dichotomy of democracy and non-democracy, have surfaced because of the difference in stances in what actually constitutes democracy.

In the literature on democracy, three indices for state of democracy have been used, namely Bollen's liberal democracy index [Bollen, 1980], Gurr's institutionalized democracy index, [Gurr, 1990] and Gastil's political rights and civil liberties score [Gastil, 1985]. All treat democracy as continuous variable rather than a dichotomous value of either presence or lack of democracy and as a result generating two important advantages, i.e. avoidance of arbitrary decisions in categorizing borderline cases of democracy [Bollen, 1989] and shares the concept that process of democratization is open ended [Dalton 1996]. While these variables do indeed retain terminal values showing the extremes of most free or most un-free, their use in studying the incremental effects of democracy on economics and the influence of economics on the consolidation or weakening of democracy is superior to a dichotomous democracy variable. [Feng, 2003]

The Bollen Index

Bollen describes liberal democracy as a function of two essential elements: political liberties and democratic rule. Political liberty, not to be misinterpreted as a state of democracy, is a function of people's ability to freely express their political opinion without any fear of persecution through any medium and their ability to form or participate in their choice of political association or organization. Democratic rule is a function of a government's accountability to the general population, and of the citizens' entitlement to participate directly or via representatives in the government. The measure of the political freedom is based on freedom of group opposition, freedom of the press, and government sanctions. And that of democratic rule is constructed from executive selection, legislative selection, and election fairness. [Bollen, 1993]

Polity Data and Institutionalized Democracy

The data set developed by Gurr and associates offers a wide range of annualized variables, including centralization of political authority and identification of major shifts in polity or political regime. It covers a long span of historical periods from 1800 to the present. Gurr offers a composite index of institutionalized democracy, conceived of as the following elements: the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders, is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation, and the existence of institutionalized constraints on the exercise of executive power by the executive. In Gurr's index, the value of democracy ranges from 0 to 10, with 10 representing the most democratic. [Gurr, Jagers and Moore 1990].

The Gastil/Freedom House Index

The most popular measure of democracy is the Freedom House political rights index developed by Gastil [1983-1989] and the Freedom House [1990-present]. The index scores nations on two separate seven-point scales measuring their levels of political rights and civil liberties. A country gets a score of 1 if political rights come closest to the ideals suggested by a checklist of questions, beginning with whether there are free and fair elections, whether those who are elected rule, whether there are competitive parties or other political groupings, whether the opposition plays an important role and has actual power, and whether minority groups have reasonable self-government or can participate in the government through informal consensus and 7 if it is un-free. The civil-liberties score also ranges from one to seven, with seven representing the most un-free. A country with a score of one enjoys freedom of association, assembly, demonstration, speech, and religion, as well as free and independent media and court systems.

2.2.3. Development

Defining development is a very difficult task at hand if not because that development is in terms and context, then its diverse definitions as it is the

most discussed subject in economics. One can allude to the simplest definitions of all that it is a progress from one state to higher state or form. The concept of prospering and progressing from one circumstance to alternative indicates that the first condition was of a lower order as compared to the final condition, which is to be desired as a goal or an achievement. As the dominant paradigm of development suggests that development must occur as a means 'to escape from the undignified condition of underdevelopment', there must first be a perception of the initial state being something lesser.

In strictly economic terms, *development* has traditionally meant achieving sustained rates of growth of income per capita to enable a nation to expand its output at a rate faster than the growth rate of its population. Levels and rates of growth of real per capita gross national income [GNI] [monetary growth of GNI per capita minus the rate of inflation] are then used to measure the overall economic well-being of a population—how much of real goods and services is available to the average citizen for consumption and investment. [Todaro, 2009].

But development shouldn't be just modification in gross value. The new read is that it should be planned as a two-dimensional method involving major changes in social structures, common attitudes, and national institutions, in addition because the acceleration of economic process, the reduction of difference, and thus the eradication of poorness. Development, in its essence, should represent the full scale of modification by that a complete social organization, tuned to the varied basic wants and evolving aspirations of people and social teams at intervals that system, moves removed from a condition of life wide perceived as dissatisfactory toward a scenario or condition of life thought to be materially and spiritually higher. No one has identified the human goals of economic development as well as Amartya Sen, perhaps the leading thinker on the meaning of development. He argues that the "*capability to function*" is what really matters for status as a poor or non-poor person. Hence, he reiterates that income and wealth are not ends in themselves. As Sen puts it, "*the expansion of commodity productions...are valued, ultimately, not for their own sake, but as means to human welfare and freedom.*"

Three basic components or core values serve as a conceptual basis and

practical guideline for understanding the inner meaning of development. These core values—sustenance or the ability to meet basic needs, self-esteem or right to be a person, and freedom from servitude or the ability to choose – represent common goals sought by all individuals and societies. They relate to fundamental human needs that find their expression in almost all societies and cultures at all times.

As a result of this paradigm shift, new methods of measuring development have evolved. The United Nations Development Program [UNDP] in its annual series of Human Development Reports presents the most widely used measure of the comparative status of socioeconomic development. The focus of the reports, which were introduced in 1990, is the formation and enhancement of its explanatory Human Development Index [HDI], which includes three elements of welfare: income, as measured by GDP per capita; longevity and health, as measured by life expectancy; and education, as measured by school enrollment and the level of literacy. In my thesis, I will use HDI to measure development rather than the conventional GDP per capita or PPP per capita.

Another recent measurement is a more broader indicator: *“inclusive wealth”*. It is the second of its kind; the first was published in 2012. The report, overseen by Sir Partha Dasgupta of Cambridge University, puts a dollar value on three kinds of asset: “manufactured” capital [roads, buildings, machinery and so on]; human capital [people’s skills and health]; and natural capital [including forests and fossil fuels]. To calculate, for example, human capital, the UN uses figures on average years of schooling, the wages workers can command and the number of years they can expect to work before they retire [or die].

2.3. Theoretical Framework and Empirical findings

2.3.1. Theoretical Framework

Hobbes [1651] was the first to support the conflict view, that democracy hinders development. To Hobbes, absolutist governments were more probable towards improving public wellbeing merely because they could not else uphold their own interests. Huntington [1968] similarly endorses this opinion. He argues that democracies have frail and unstable political institutions and lend

themselves to popular demands at the expense of lucrative investments. Democratic governments are susceptible to requests for reallocation to lower-income groups, and are encircled by rent-seekers for “*directly unproductive profit-seeking activities*” [Krueger 1974, Bhagwati 1982]. Non-democratic governments can apply coercively the difficult economic programs fundamental for growth, and overpower the growth-hindering demands of low-income earners and labor in general, as well as social volatilities because of ethnic, religious, and class strives. Democracies cannot quash such clashes. For economic progress, markets should come first and authoritarian regimes can easily facilitate such strategies. Furthermore, some level of development is a pre-requisite for democracy to function properly [Lipset’s 1959 hypothesis]. All things considered, this view suggests that democracy is a luxury good that cannot be afforded by developing countries.¹

The arguments above lies on numerous assumptions, the main one of which is that if given power, authoritarian regimes would perform in a growth friendly manner. In that vein, some opposing instances are stipulated where dictators practiced their own welfare and failed presumably in Africa and the socialist world [de Haan and Siermann 1995, Alesina *et al.* 1996].

Proponents of democracy, instead, argue that rulers are likely robbers [Harrington 1656] and democratic institutions can act to constrain them [North 1990]. Greatest number of the suppositions of the conflict view can be refuted with good reasons [Sirowy and Inkeles 1990]. Implementation of the rule of law, contract execution and safeguarding property rights do not necessarily imply an authoritarian regime. The second has an inclination to repossess assets if it can expect a brief tenure [Olson 1993] or even in the long-run [Bhagwati 1995], for more fraudulent and excessive use of resources, internally unreliable policies, and momentary and precarious economic progress [Nelson 1987]. The incentive of citizens for work and invest, the efficient distribution of resources in the marketplace, and profit boosting private activity can be maintained with higher political rights and

¹ Further advocates of the conflict view and firmer state authority on the economy comprise Galenson [1959], Andreski [1968], Huntington and Dominguez [1975], Rao [1984-5], and Haggard [1990].

civil liberties. In addition, Bhagwati [1995] argues that democracies rarely engage in military conflict with each other, and this encourages world peace and economic growth. They are moreover more likely to provide less volatile economic performance.

Among these conflicting views and inconsequential empirical results, it is likely that a purported skeptical outlook has appeared. The followers of this view debate that it is the institutional structure and organizations, before regimes *as such*, that matters for development. Developmental government policies can be founded all regimes. A sound leadership that will resolve collective action problems and be responsive to rapidly changing technical and market conditions is more essential for growth [Bardhan 1993]. Though he himself an adherent of democracy, Bhagwati [1995] maintains that markets can bring growth under both democratic and authoritarian regimes. Nonetheless, there have also been examples that the institutional structures under both regimes are plagued by not creating the “right” choices for their subjects.

The democracy-growth question is more precise and focused today, thanks to accumulation of research and a growing list of country experiences [e.g., Russia, China, Latin America, and the Asian financial crunch]. Theory has retreated from traditional conflict vs. compatibility arguments, because different aspects of the broader institutions-growth problem have been recognized. For example, scholars have disjointed economic democracy from democracy. Elements like safeguarding of property rights, business, credit and labor market regulations, which were previously attributed to democracy, are now being treated as part of economic democracy. Study of economic freedom indicators from the Fraser Institute [by Gwartney and Lawson 2000] and including the Heritage Foundation [by O’Driscoll *et al.* 2003] has shown that economic freedom, with also its other aspects, is equally relevant to growth [Doucouliagos and Ulubasoglu 2006]. Furthermore, Kaufman *et al.* [2003] introduced the governance aspect of the institutions problem. Formerly, factors such as rule of law, voice and accountability, government efficiency, political instability, corruption, and regulatory quality were either partly or totally attributed to democracy. These, too, are associated with higher growth. Recently, the World Bank initiated the “Doing Business” aspect

of the institutions problem. In particular Djankov *et al* [2005], Djankov, McLiesh and Shleifer [2005], and Botero *et al* [2004] benchmarked business regulations and quantified the easiness of private sector's activity in the economies based on labor hiring and firing practices; ease of starting, registering and closing business; protecting investors and enforcing contracts; and dealing with licenses and paying taxes.

Here one may feel that dissecting these aspects from democracy reduces its scope to multi-party and free elections merely. Democracy is more than free elections. First, empirical evidence shows that all the aspects of the institutions made precise above, i.e., economic democracy, governance and private sphere in the economy have high correlations with democracy. In other words, the mere existence of participatory democracy implies the broader institutions conducive to growth. As Rodrik [2000] argues, democratic regimes can be the meta institution for building market-supporting institutions.

Secondly, various studies find that democracy has enormous indirect effects on growth through human capital accumulation, income allocation, and political stability [see Baum and Lake 2003, Alesina *et al.* 1996]. Further more, Sturm and de Haan [2001] find that the presence of democracy in a country positively affects the level of economic freedom. Thus, on the question of democracy and growth, one should remember the larger connotations that include the channels, or the indirect effects, amid democracy and growth rather than one-to-one causation from regime to growth.

Thirdly, as Bhagwati [1995] and Rodrik [2000] indicate, democracies deliver higher quality growth through numerous ways. Rodrik puts it in the following way: participatory democracies enable a higher-quality growth by allowing greater predictability and stability in the long-run, by being stronger against external shocks, and by bringing better distributional outcomes. Democratic institutions would help markets function "perfectly", as is assumed in neoclassical economic models. As an extension to such arguments, the "volatility" channel has also been shown to be an important indirect effect of democracy on growth. Sah [1991] had argued that authoritarian regimes exhibit more volatile performance than democracies. Non- democratic

regimes are not a homogenous lot [de Haan *et al.*, 1995, Alesina *et al.* 1996, Alesina and Perotti 1994], whereas democracies are more homogenous and can provide stable economic development. Such a concept also implies less volatile and long-standing economic progress. Quinn and Woolley [2001] hint the endogeneity between growth and volatility, while Mubarak [2005] analyzes this new channel in multi-equation framework and finds that higher levels of democracy increases growth through lower volatility.

Lipset [1959] was a pioneer to look at the prospect of a causal connection between economic growth and democracy. He supported the view that as a regime experienced economic growth and reach a desired level of GDP per capita, a transition to democracy turns out to be more probable. From the time of Lipset's suggestion, the relationship between economic growth and democracy has remained the topic of an animated discussion. Przeworski and Limongi [1997] examine two theories of economic growth and democratization in order to examine the resilience of democracy. They find two reasons for this potential relationship. One is endogenous; that development has a positive impact on the stability of a democratic country. The other is exogenous; that democratic governance establishes itself independently of the level of economic development, but is more likely to survive in developed countries. Boix & Stokes [2003] challenge the conclusion of Przeworski & Limongi [1997], however, and argue that endogenous democratization also possesses explanatory power. They find evidence that there are certain "thresholds" of income levels that make countries more likely to embark on a democratic transition, hence, supporting both the exogenous and endogenous theories of democracy.

On the other hand, on the inverted causal relationship - whether democracy contributes to increased levels of development, Przeworski & Limongi [1993] has found no evidence in the direction that whether democracy fosters or hinders economic growth. They point to the idea that there is a thin theory on the determinants of economic growth in general, making it even harder to identify the effect of politics. Taking into consideration the political differences between the regimes that have experienced development, they conclude that something else, even though that something else stayed unanswered, rather than the type of regime that makes the difference how a

country performs.

2.3.2. Empirical findings

In the statistical findings on the relationship, which generally shows a mixed results, Przeworski & Limongi [1993] compare 18 statistical studies and 21 findings where eight studies supported in favor of democracy, eight found evidence in favor of authoritarianism, and five discovered no difference. Their results and conclusions show, "that political institutions do matter for growth, but thinking in terms of regimes does not seem to capture the relevant differences"

Pourgerami [1988] reports a positive association between his measure of democracy, which is constructed on the basis of the frequency of violations of human rights, and economic growth. Scully [1988] concludes that for 115 market economies over the period 1960-80 politically open societies, which subscribe to political, civil and economic liberty, grow at three times the rate of societies in which these freedoms are restricted. For their group of 47 countries Kormendi and Meguire [1985] find that countries in the high-civil liberty category experience about 1 percent greater annual economic growth. Similarly, Grier and Tullock [1989] conclude that repressive countries in Africa and the Americas have about a 1.5 percentage point lower annual growth rate than other countries included in their study.

Barro [1989] presents results for a sample of 98 countries, which also indicate that restricted political rights are associated with lower per capita growth. Similar conclusions are reached by Dasgupta [1990] who claims, "political and civil liberties are positively and significantly correlated with per capita income and its progress" [Dasgupta, 1990]. Certainly, in his assessment of empirical growth studies, Levine [1993] determines, "political freedoms appear to be somewhat positively related to growth.

The increasing availability of data and econometric techniques enabled researchers to explore more these issues empirically. The findings, though, extend a range of negative, insignificant and positive estimates, producing a conundrum. For instance, the distribution of results that Doucouliagos and

Ulubasoglu [2006] have collected from 470 regression estimates from 81 democracy-growth studies shows that 16% of the estimates are negative and statistically significant, 20% of the estimates are negative and statistically insignificant, 38% of the estimates are positive and statistically insignificant, and 26% of the estimates are positive and statistically significant. This infers that three-fourth of the regressions have not been able to establish the “desired” positive and significant sign. It also implies that around half of the regression models have found significant estimates while the other half found insignificant estimates. These diverse outcomes are not unforeseen since research questions modeled are plausibly narrow and approach the problem from different angles. For example, while selected studies emphasis on the physical investment channel between democracy and growth, others look at human capital or political instability channels. Equally, some studies present structural estimates of a clearly designed model, while others center on the empirical regularities in the data. Consequently, the question is confounded with a range of estimates, which vary due to data sources, estimation methodologies, sample compositions, and time period. [Doucouliagos and Ulubasoglu , 2006]

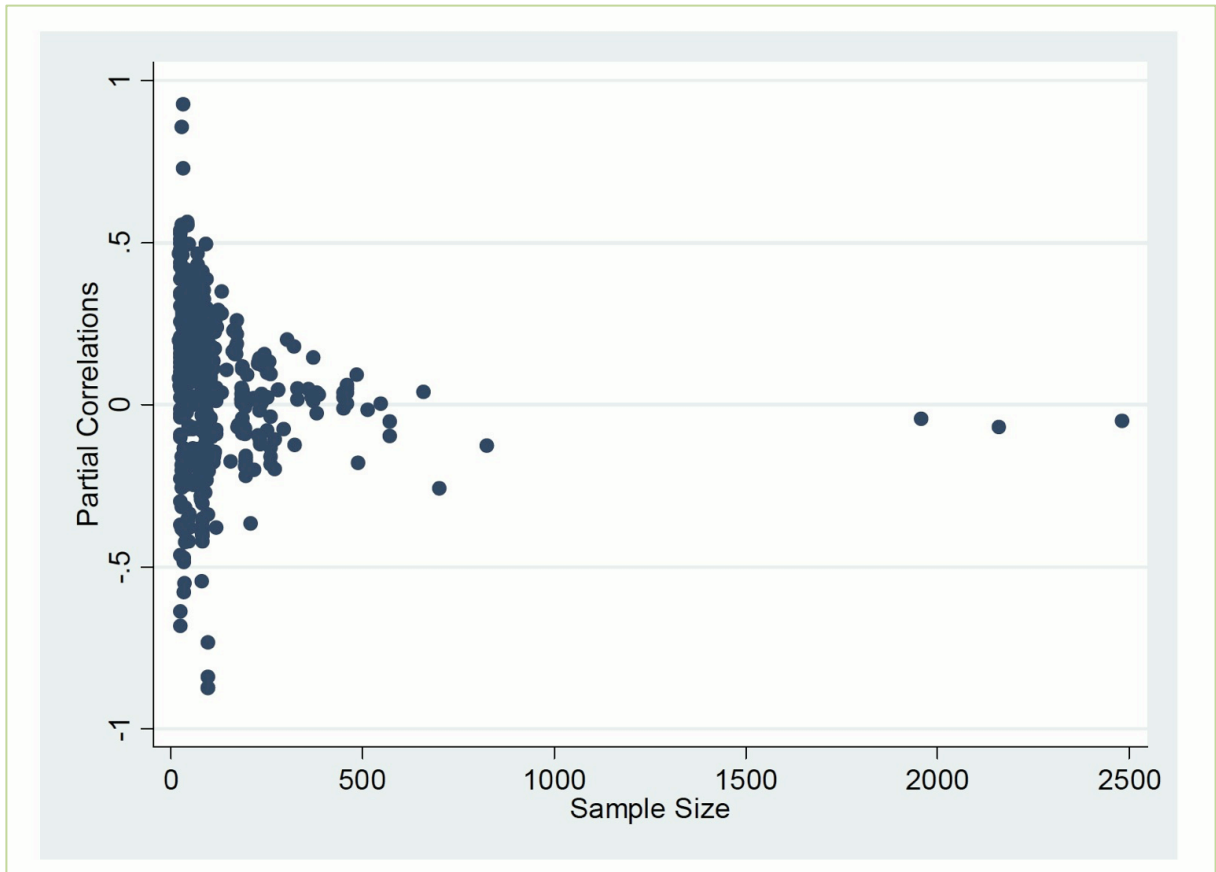


Fig. 2.1. Published Democracy Growth Effects, All Set [Doucouliagos and Ulubasoglu, 2006]

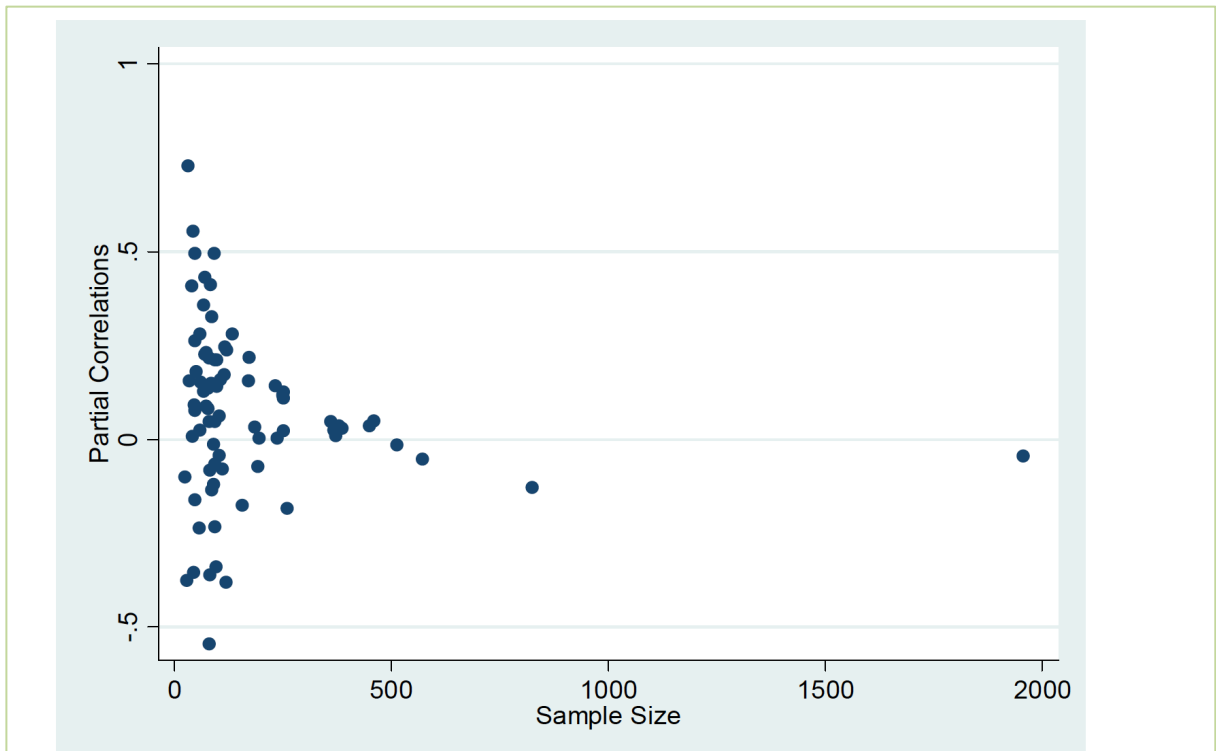


Fig. 2.2. Published Democracy Growth Effects, Best Set

More recently, Daron Acemoglu *et al* have showed that once the dynamics of

GDP are controlled for in a fixed effects OLS regression, there is an economically and statistically significant positive correlation between democracy and future GDP per capita. This result remains true in GMM estimates that account for any bias due to lagged dependent variables, as well as with semi-parametric estimators based on a propensity score for democratic transitions estimated using past lags of log GDP. Their preferred specifications imply that long-run GDP increases by about 20% following a democratic transition. [Daron Acemoglu *et al*, 2014]

3. Research Design and Methods

As I have explained in the literature review, explaining the difficult task of measuring both democracy and development needs a stringent consideration in choosing which conditions and outcomes to choose from. As a result a very carefully and cleverly thought out research design is needed. In the beginning, I will explain the rationale of using Qualitative Comparative Analysis in section 3.1.1, henceforth abbreviated as QCA. Next, the motivation and explicit choice of the specific technique of fuzzy QCA [fsQCA] will be explained in 3.1.2, moreover I will discuss the concept of calibration and its importance in section 3.1.3. Finally, the methods of analysis will be discussed in section 3.1.4.

In 3.2.1. I will explain operationalization of the data, the steps taken and the choice of the conditions and outcomes will be discussed. And in the end, in section 3.2.2., I will explain my data, the source, and its characteristics,.

3.1. Research Method

3.1.1. Qualitative Comparative Analysis [QCA]

Qualitative Comparative Analysis [fsQCA] is a method of attaining summarizations from data that are related with cases. It was developed by the renowned social scientist Prof. Charles C. Ragin, but has, till recently, economists have rarely applied it. According to Ragin [2008]: *“The goal of Qualitative Comparative Analysis [QCA] is to derive a logically simplified statement describing the different combinations of conditions linked to an outcome.”* Each arrangement of conditions and same outcome is sometimes referred to as a *type* or a *typological configuration* [Rihoux and Ragin, 2009].

Ragin argues that both traditional quantitative and qualitative approaches are not deemed specifically useful, since they either focus on analyzing a large number of cases with a small number of variables or on studying a small number of cases with a large number of variables [Ragin, 2000]. Findings based on too few observations in order to develop an accurate statistical model, whereas employing a completely qualitative approach is not considered feasible with regard to the time available to the researcher and the

impossibility to obtain in-depth knowledge with all cases [Ragin, 2008]. Thus, Qualitative Comparative Analysis [QCA] originally introduced by Charles Ragin in 1987, offers a solution by linking the quantitative to the qualitative analysis; cross-case patterns are qualitatively examined and quantitatively analyzed [Rihoux, 2003]. In this vein, Ragin [2007: 69] claims that QCA, or the configurationally comparative approach more generally, combines the strengths of within-case and cross-case analysis and is therefore particularly useful for medium-N studies [Schneider & Wagemann, 2012].

The main reason I found it useful in my study is because of its particular conception of causality [Ragin, 2000]. In distinction to more conventional approaches on causation, causality is considered nonlinear, non-additive, non-probabilistic and any type of permanent causality is rejected [Ragin, 1987]. Moreover, QCA emphasizes *equifinality*, basically meaning that various arrangements of causal conditions, or 'paths', are capable of generating the same outcome. This makes QCA a potent method in exploring social phenomena of 'complex causality' [Schneider & Wagemann, 2006]. In order to facilitate the systematic comparative analysis of complex cases, cases must be translated into configurations. A configuration is a specific combination of factors, also called *conditions* in QCA terminology, which produces a given outcome of interest [Rihoux & Ragin, 2009]. Within this method, QCA enables the identification of conditions that are *necessary* and conditions that are *sufficient* to produce the outcome. Whereas a necessary condition must always be present for an outcome to occur, the presence of a sufficient condition always leads to the outcome of interest. This analysis of necessity and sufficiency enables the researcher to model quite a high level of complexity with only a few conditions. Accordingly, Schneider & Wagemann [2010] argue that QCA's sensitivity to causal complexity gives it an analytic edge over many statistical techniques of data analysis and they consider QCA to be the most systematic instrument to analyze complex causality and logical relations between causal factors and an outcome.

Furthermore, QCA and its prescribed tools deliver an efficient instrument for conducting the significant amount of data involved in medium--N case studies [Legewie, 2013]. This will help both in the analytical process and with regards to demonstrations of the outcome. Likewise, the methodical and

proper method of QCA raises the transparency and its ability to replicate analytical processes often obscured within conventional case study methods, which increases the reliability of findings and the persuasiveness of argumentation. Single case studies face major difficulties to engage in any form of generalization, the ultimate goal of QCA to ‘construct empirically grounded, theoretically relevant typologies of cases, advancing both general theoretical knowledge and understanding of historically specific diversity of empirical cases’ [Ragin, 2003]

The logical number of possible causal combinations, also called the multidimensional vector space, is calculated by using the simple formula of 2^k , with k being the number of causal conditions [Ragin, 2000].

3.1.2. Fuzzy-set QCA [fsQCA]:

Conventional QCA methods has evolved both in its extension in accommodating other non-dichotomous variables and its analytical skills. In QCA, a case can belong to multiple sets, in which a set is involved of all cases that show a certain attributes [e.g., democracy]. In the original application of QCA, it is a strictly binary Boolean language that uses to express the qualitative state of conditions and outcomes and set membership is thus *crisp* [either 1 or 0, i.e. full membership or non-membership], a method known as crisp-set QCA [csQCA] [Ragin, 1987]. This will make some aspects of research insufficient, as, in many cases, variables are continuous rather than dichotomous. The application of csQCA would thus be arbitrary and moreover, it would not allow for an assessment of the effect of the relative strengths of the independent variables/conditions [as they can only have two values] It is to this effect that fuzzy-set QCA [fsQCA] became the preferred method to test the formulated hypotheses in my thesis of causality between democracy and development. We can clearly understand that there are types of regimes between pure democracy and dictatorship as some countries fall in between the two as some give economic freedom some held elections even though there are a dominant party and hence the opposition is curtailed from participation. In contrast to csQCA, set-membership in fsQCA is ‘fuzzy’ [interval scores between 1 and 0]: a case can thus be fully in [= 1.0], more in than out, neither in nor out, more out than in, or fully out of a set [= 0.0].

Therefore, using a ‘fuzzy’ method makes it possible to permit the scaling of membership scores and thus allows partial membership [Ragin, 2009].

Based on the in-depth case knowledge the researcher determines the number of levels in fuzzy-sets [Ragin, 2009]. The most rudimentary is the three-value-set [Ragin, 2009] that specifies three qualitative breakpoints: full membership [1], full non-membership [0], and the crossover point [0.5]. However, as stated by Ragin [2008] the assignment of membership scores of 0.5 should preferably be avoided for theoretical, practical and technical reasons; in contrast to the scores of full-membership [1.0] and full non-membership [0.0], the crossover point should only be a qualitative threshold and an emphasis should be given to the theory behind the crossover points. I will discuss in the analysts the methods and ideas I used to assign membership thresholds in my study later in this chapter. In situations where researchers have a substantial amount of information about cases, and the nature of the evidence is not identical across cases, a four or six value scheme is considered more useful [Ragin, 2009]. The most important advantage of the specification of these qualitative anchors is that it allows making a distinction between relevant and irrelevant variation when assigning scores to cases [Ragin, 2009].

The basic principles of fsQCA [Yager *et al*, 2013] are:

1. *Conjunctural Causation*: It is usually not just one postulated causal condition that by itself causes a desired outcome. Instead, it is a combination of causal conditions that causes a desired outcome. FsQCA can determine such a combination of causal conditions. Not all of the postulated causal conditions may be in a causal combination that produces a desired outcome. FsQCA can strip away the unneeded causal conditions in each causal combination.
2. *Equifinal Causation*: There can be different combinations of causal conditions that produce a desired outcome. FsQCA can establish which causal combinations do this.
3. *Limited Diversity*: Usually there are not enough cases available to provide instances for each of the possible causal combinations. Substantive knowledge provided by expert[s] during thought experiments— counterfactual analysis— supplements case-data.
4. *Causal asymmetry*: Generally there is causal asymmetry between fsQCA

for a desired outcome and fsQCA for the complement of that outcome. Generally it is not the complements of the causal combinations associated with the desired outcome that are associated with the complement of the desired outcome.

5. *The Sufficiency of a Causal Combination is Not Black and White*: Each winning causal combination is not 100% sufficient to be a cause of the desired outcome. FsQCA computes a fuzzy measure of sufficiency.

6. *The Same Set of Cases do not Have to be Used for Different Outcomes or for Different Objectives for the Same Outcome*: Identify the best possible instances of the phenomenon to be explained and then study those instances [cases] in great depth. Casing is outcome driven, i.e. you can have different choices of cases for different kinds of studies: [a] Study for which there is only one case; [b] Study when there are a set of cases for the same outcome; [c] Study for which there are both negative and positive cases for the same outcome; [d] Study that uses the entire population [such a study seeks generalizations about the population]. According to Ragin [2008]: "It is wrong to label a study flawed simply because it omits negative cases, for there are many good reasons to study positive cases in isolation from negative cases." Choosing appropriate cases should be done first, and this choice does not have to be done irreversibly, i.e. it can be modified during the entire fsQCA procedure.

3.1.3. Methodology relevance to my thesis

Fuzzy-set QCA gives numerous benefits. Primary, it is better fit than regression for investigating causal configurations- states in which variables have an effect only in combination with a high or low degree of one or more other factors. In regression analysis, causal configurations are evaluated through interaction terms. However, a small N restricts the number of interactions terms that can be incorporated in a regression model.

In addition, the inconvenience of interpreting interaction terms with more variables makes modeling complex interactions problematic. Additionally, whilst evaluating interactions in regression, it requires that variables exhibit a multiplicative effect. QCA treats any case aspects that appear together systematically - in any quantity - as potentially interdependent. Secondly, fuzzy-set QCA permits us to distinguish several pathways to an outcome.

Correlational techniques such as regression treat the presence of an outcome [dependent variable] without a given cause [independent variable] as negative evidence for the strength of that causal justification. Consequently, a factor that has a control in a subset - but only a subset - of cases tends to become buried in regression outcomes with subdued coefficients and overestimated variance. In distinction, fuzzy-set QCA can disclose causal arrays that vary throughout subsets of cases. This method thereby lets one to study relatively sizeable datasets with more complex causal narratives than are normally probable with correlational techniques. Thirdly, while regression is suitable for examining tendency relationships- the common inclination of a specific factor to impact an outcome of interest, it is helpful to use fuzzy-set QCA in exploring a different kind of relationship: causal sufficiency. Fuzzy-set QCA assesses sufficiency via the logic of set-theoretic relations. Set theory is inherent [though often implicit rather than explicit] in much of social science [Ragin, 2000].

3.1.4. Calibration of concepts

In working to allot grades to conditions and outcomes of my data in a more effective and consistent system, the model and data need to be operationalized first [Kellstedt & Whitten, 2009, Ragin, 2000]. The next step involves the calibration of fuzzy-set membership so that the variables correspond to theories and external standards behind them [Glaesser & Cooper, 2013; Ragin, 2007]. This process, also referred to as ‘fuzzification’, comprises the trajectory of getting from base variable values [also called raw data] to condition or outcome set membership scores. Applications of fsQCA in most areas of the social sciences make use of two different calibration procedures; the method of direct assignment and the method of transformational or indirect assignment [although originally Ragin call the second one direct] [Thiem & Duşa, 2013]. In this research the method of transformational or indirect has been employed [as applied in Thiem & Duşa, 2013]. The direct method entails that fuzzy-set membership scores are directly arrived at through expert knowledge. With this in-depth knowledge the three qualitative anchor points must be specified: full membership [1], full non-membership [0], and the crossover point [0.5] [Ragin, 2009]. These three breakpoints are

used to transform the original ratio or interval-scale values into fuzzy membership scores with the help of fs/QCA software, using transformations based on the log odds of full membership [Ragin, 2008]. Since this process is fundamentally interpretive, decisions have to be made transparent. I will come once again to the point of methods I used to benchmark the sets in subsequent sections.

3.1.5. Data Analysis in fsQCA Methods.

Next in line after the benchmarking of the threshold comes the calibration of the observations and analysis. The results are processed using fs/QCA data analysis software [version 2.5] [developed by Ragin, Drass & Davey, 2014] and STATA [developed by Longest and Vaisey]. In the data-analysis process of fsQCA four concepts are of particular importance and will be discussed next.

First come the number-of-cases threshold, meaning the researcher needs to choose those from the all the causal combination to be considered relevant [Ragin, 2009]. The number of cases under study, the number of conditions, the degree of familiarity of the researcher with each case, and the degree of precision reached in calibrating the fuzzy-sets [Ragin, 2009] has to be considered.

Next, the key set theoretic relation in the study of causal complexity is the 'subset relation' [Ragin, 2000]. The subset relation involves the determination whether a combination of causal conditions [*i.e.* configuration] may be interpreted as sufficient or necessary for the outcome. With fuzzy-sets, a subset can be established when membership scores in one set [*e.g.*, one or a set of conditions] are consistently less than or equal to membership scores in another set [*e.g.*, the outcome] [$X_i \leq Y_i$] [Ragin, 2009]. In addition, when other sets of cases have other relevant conditions in common also leading to the same outcome, then these cases constitute a subset of the outcome as well [Ragin, 2009].

After that, the degree to which a relation of necessity or sufficiency between a causal condition [or set of conditions] and an outcome is met within a given data set needs to be measured, also known as the 'set theoretic consistency' [Ragin, 2009, 2006]. Its measure mimics the notion of significance in

statistical models [Thiem, 2010]. Values of consistency range from '0' to '1', with '0' being no consistency and '1' relating to perfect consistency. One need also examine the 'set-- theoretic coverage'. This involves the assessment of how much of the outcome is covered by the configuration, which basically comprises an examination of the relative empirical weight that is carried by the set--theoretic relation. [Ragin, 2008].

3.2. Model specifications, data and operationalization steps

3.2.1. A general discussion on model specification

In the literatures I have disused there are different empirical results because of either the difference in methodology or the explaining variables that are incorporated in the models. Theory has moved away from traditional conflict vs. compatibility arguments, because different aspects of the broader institutions-growth problem have been identified. For instance, researchers have separated economic democracy from political democracy. Factors like protection of property rights, business, credit and labor market regulations, which were previously attributed to political democracy, are now being treated as part of economic democracy [see Doucouliagos and Ulubasoglu 2006]. Many have found that democracy has affected growth indirectly rather than directly through human capital, income distribution, stability, inflation and so on.

Doucouliagos et al [2006] has found in the meta analysis of the data in the development-democracy researches, that democracy has a zero effect but it has some positive and other times negative effect through other channels. Table summarizes some of the their findings.

Table 3.1: Direct and indirect -growth effects.

Direct Effect of Democracy on Growth:	Zero
Indirect effects of Democracy on Growth through:	
Economic Freedom	Positive
Human Capital	Positive
Inflation	Positive
Political Stability	Positive**
Size of Government	Negative*
International Trade	Negative**

* detected only in the Best-Set. ** detected only in the All-Set.

My model will be based on Barro's determinants of economy and incorporating the ideas I have discussed above hence the relation will be in addition to the direct one the other explanatory themselves are affected and hence they are a function of democracy. To state it mathematically:

development

$$= f[\textit{Human capital}, \textit{Democracy}, \textit{Phusical Capital}, \textit{Other factors}]$$

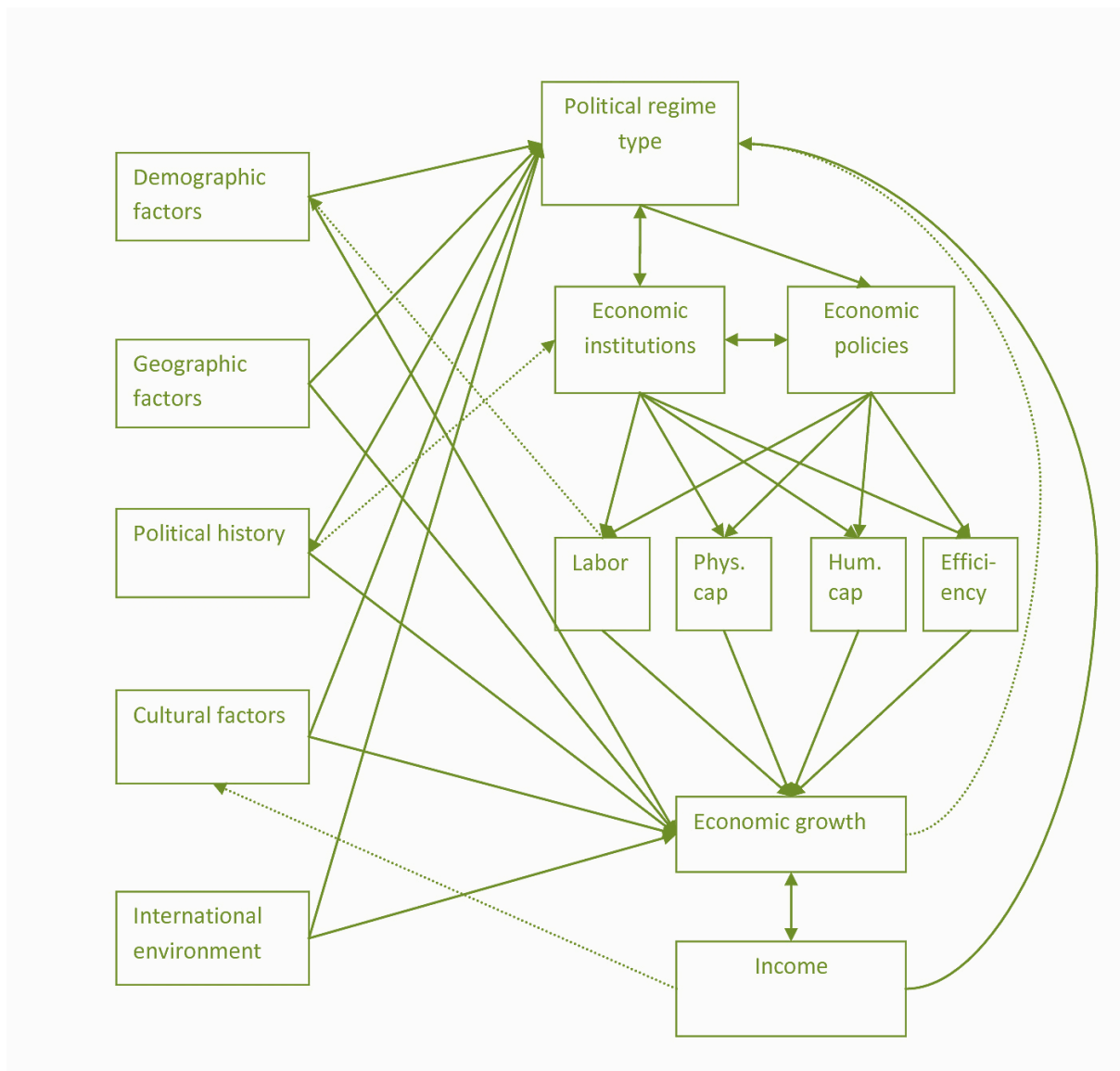


Figure 3.1: A simplified picture of the causal relations between regime type, economic outcomes and other selected factors [by Carl Henrik Knutsen]

3.2.2. Data

I have collected data from different sources for the years 2000-2013 and the amount of cases [countries] that included is merely because of the availability of data rather than by choice. I have tried to make the data as representative as possible and as many as possible. However given that fsQCA's limited capacity of computing and the large amount of combinations that might create, I limited the amount of conditions accordingly and as the a result missing causal conditions like regime history, geographic and demographic characteristics has been dropped. In human capital I have included conditions like Barro-Lee data on year of schooling attainment, life

expectancy at birth and birth rate. As Economic freedom index incorporates rule of law, protection of property right and protection from corruption, it will be also taken as a proxy to these conditions. My outcome will be development expressed in the trend of Human Development Index. The reason I chose the index instead of other development measures like GDP per capita or PPP per capita is for the same reason of the debate in how much change in income or in production changes the wellbeing of a citizen. I have found also in the data countries like Equatorial Guinea and Chad have shown a tremendous growth because of the exploration of oil in their respective countries. The same can also be said about Angola. The lists of conditions and an out come I have chosen are [the colors code in whether it is physical capital, human capital or other factors]:

Table 3.2: List of conditions and outcome

Var. Name	Type	Source
Outcome		
hdi	Human Development index, trend 2000-2013	UNDP
Conditions		
polity2	Polity IV index [Higher 10- lower -20] Average 2000-2013	INSCR
fhi	Freedom House PR index [Lower 7-higher1]	Freedom House
gdpcap	Log of GDP per capita [2000]	World Bank
inv	Investment ratio [%GDP] Average 2000-2013	World Bank
inf	Inflation, GDP deflator [Average 2000-2013]	World Bank
open	Trade [% GDP] [Average 2000-2013]	World Bank
govsize	Government consumption [% GDP] [Average 2000-2013]	World Bank
yrsch	Barro-lee years of schooling [2000]	Barro-Lee Data
life	Life expectancy at growth [2000]	World Bank
popn	Population growth [Average 2000-2013]	World Bank
gini	Gini coefficient [Average 2000-2013]	World Bank
urb	Urbanization [% total] [Average 2000-2013]	World Bank
econfree	Economic Freedom Index [Average 2000-2013]	Heritage Foundation
stab	Stability Index [Average 2000-2013]	Worldwide Governance Indicators [WB]
N.B. Averages are smoothed with 3-years moving average. ■ Econ. ■ Hum. ■ Pol.		

3.2.3. Steps of analysis

Preparatory Steps

First I have Choose the desired outcome, which has to go with the aim of my study. The focus of my study is the presence of development rather than lack of it; I haven't considered the negative outcome.

The next step was to choose the appropriate conditions that go with my model in determining development and treat the needed outcome and causal conditions as fuzzy sets, and determine membership functions [MFs] for all of them. I have used the assignment by transformation method to that.

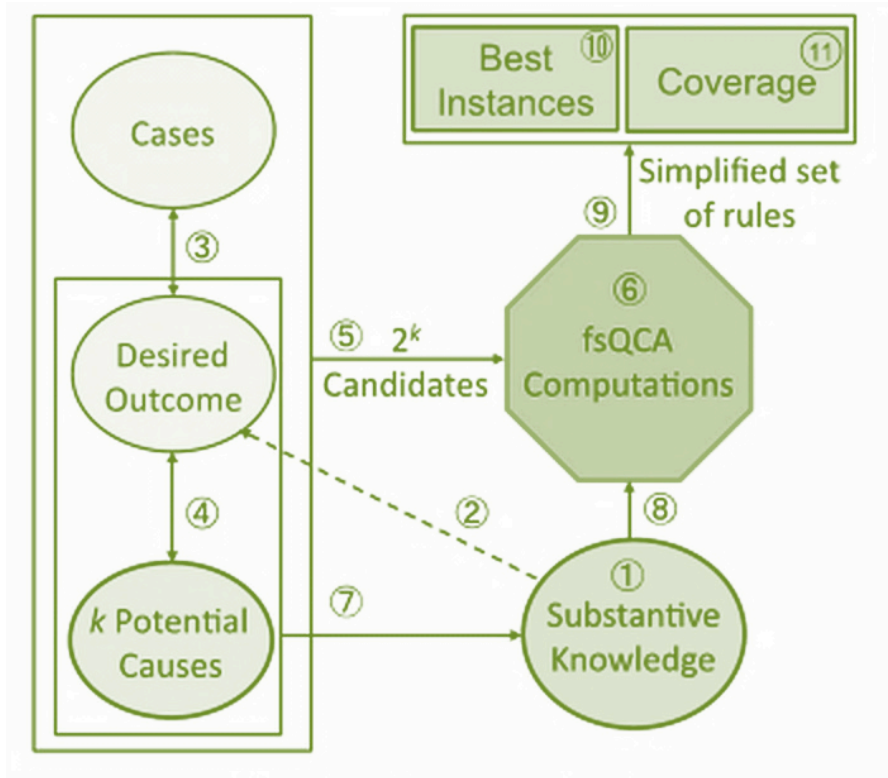


Fig. 3.2. Steps in fsQCA

Then I evaluate these MFs for all available cases, the results being *derived MFs*. Finally before going to the computational part, I created the causal combinations [rules] and viewed each as a possible corner in a dimensional vector space.

Computational Steps

The next step is to compute the MF of each of the candidate causal combinations in all of the available cases, and keep only the ones whose MF values are greater than 0.5, i.e., keep the causal combinations that are closer to corners and not the ones that are farther away from corners. After that I computed the consistencies of these *surviving* causal combinations, and keep only those causal combinations whose consistencies are > 0.80 if one chooses it

to be permissive or 0.9 to be more restrictive consistency threshold.

Using Quine McCluskey [MQ] algorithm [which has been done through Ragin's fs/QCA application], I obtained the complex and parsimonious solutions. After performing Counterfactual Analysis on the complex solutions based on my knowledge from the literatures about the democracy and the existence or absence of its channels, I constrained by the parsimonious solutions, to obtain the intermediate solutions. The complexity of an intermediate solution is supposed to be between complexities of the complex and parsimonious solutions, and, according to Ragin [2008], the intermediate solutions are the most useful ones for the analytical part.

Summarization steps

Finally, The computed coverage provides a measure of *generality* of a summary because it shows how many cases support the summary. It is an assessment of the degree to which a solution is supported by cases. In other words, coverage determines what percentage of cases covers a solution. Ragin [2008] mentions three kinds of coverage and Rihoux and Ragin [2009] define them as: [1] *solution coverage*, which is the proportion of cases that are covered by *all* of the terms; [2] *raw coverage*, which is the proportion of cases that are *simultaneously* covered by *each* term *one at a time*; and, [3] *unique coverage*, which is the proportion of cases that are uniquely covered by a *specific term* [no other terms cover those cases]. Each measure of coverage provides a different insight into the believable simplified intermediate solutions. In my analysis I will focus on raw coverage and solution coverage.

4. Results and Discussions

In my analysis I will use the fsQCA methods to see if there are any causal relationships with economic growth either directly or indirectly as it was suggested in many papers through economic activities like capital accumulation, human capital or other political factors like rule of law, stability, economic freedom.

4.1. Notations

The standard notation for qualitative comparative analysis is used. The presence of a condition stated by its variable name or label, while a negation of the variable name indicates the absence of a condition. The symbols used are:

Table 4.1: Notations

Operator	Notations Used
AND	Multiplication [$*$]
OR	Addition [$+$]
NOT	Complement [\sim]

4.2. Descriptive analysis

A simple glance at an xy-plot between both Polity IV and FHI [Freedom House Index] shows that except for a very few outliers most of the trend in Human Development Index is the same in most countries and majority of the already developed countries has reached the saturation stage that the growth rate and change in other components of the index and shows a little sign in showing change in the index. As a result, I found that the index helps to compare the developmental growth more in the developing countries than the developed.

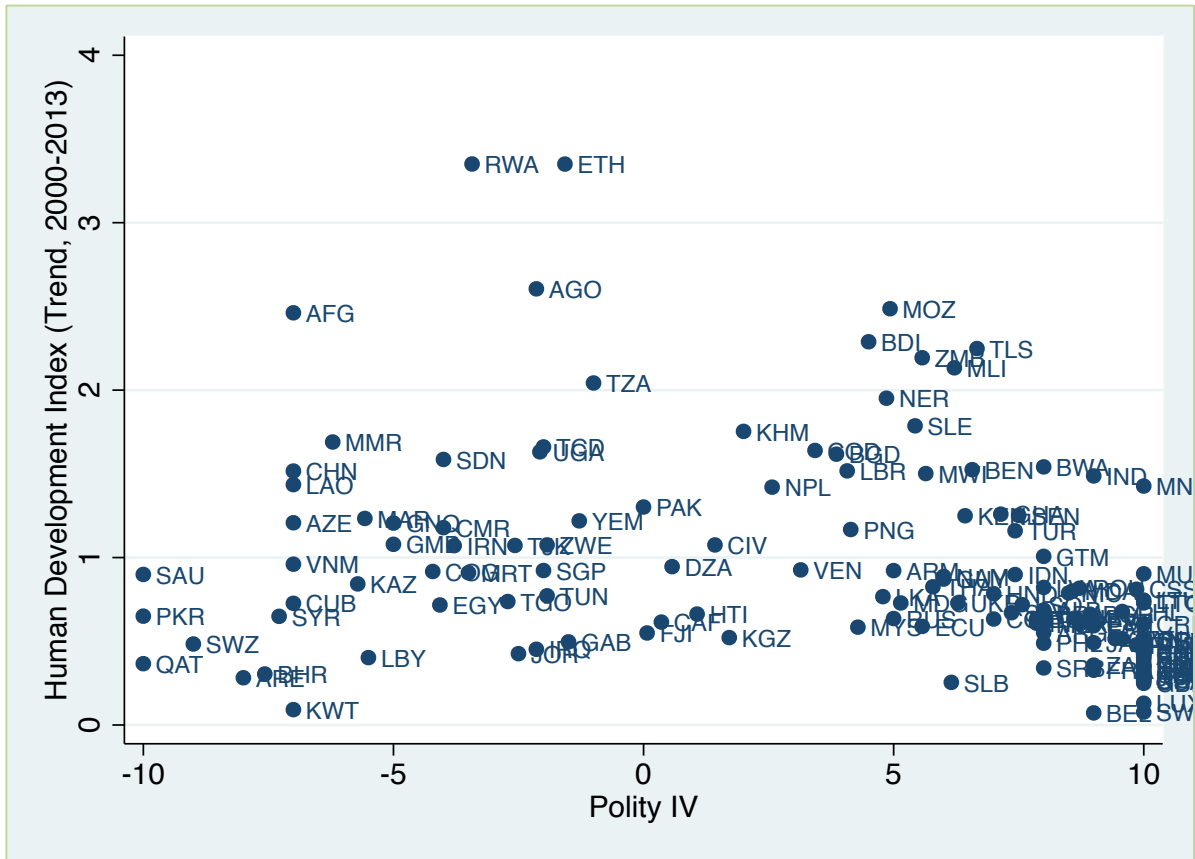


Fig. 4.1: Human Development Index & Polity IV

Among the very few outlier countries that have shown a higher trend in HDI in the last decade are two contrives governed by two closely allied parties that follow the same developmental state policies while Afghanistan has come out of destruction and a lot of western money has gone to its human development. Otherwise, many of the undemocratic countries exhibit different kinds of out come while majority of the developed counters converge to in a similar trend area.

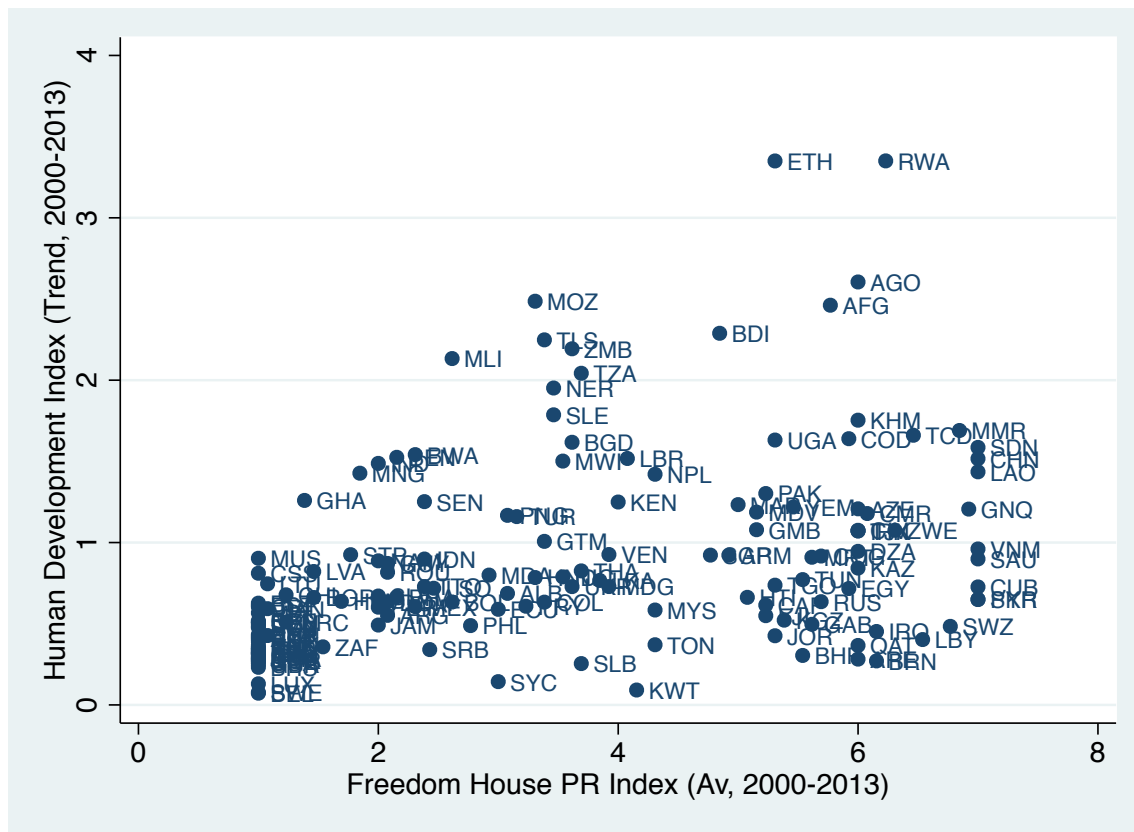


Fig. 4.2 : Human Development Index & Freedom House PR index

4.3. Calibrating Data Set

As I have discussed in the previous chapter, principally, calibration can take three different routes. Direct methods draw on expert knowledge to provide membership scores. Indirect methods also use expert knowledge, but this has to be processed, often via some curve-fitting method, in order to translate it into fuzzy set membership scores.

I have use in calibrating my data the assignment by transformation method, although it is frequently used it has some drawbacks. [see Thiem 2010]. It is based on some function that transforms existent data on an interval or ratio-scaled base variable, such as GDP, power capabilities or public opinion, into fuzzy set membership scores while taking the substantive meaning of the values on their underlying scale with regards to the label of the fuzzy set into account.

More precisely, I used the linear method [More methods given in the appendix]. The transformational rule the author establishes is a simple cumulative distribution of a uniform density function that normalizes the set.

In Stata, `stdrank[varname]` rank orders the variable and then standardizes this ranking to range from 0 to 1. The equation for this standardization is

$$\frac{\text{rankedvar} - \min(\text{rankedvar})}{\max[\text{rankedvar}] - \min(\text{rankedvar})}$$

4.4. Results based on economic activity

I have included Log of GDP per capita [`gdpcap`], Investment ratio [`inv`], inflation [`inf`], Openness/Trade [`trad`] and government size/consumption ratio of GDP [`govsize`] in addition to democracy /Polity IV [`polity2`]. This will give a truth table with 2^6 or 64 rows. Before I proceed to the truth table, I will analyze the each conditions relation to the outcome and among each other.

Table 4.2: Coincidence Matrix

	hdi	polity2	gdpcap	inv	inf	open	govsize
hdi	1.000						
polity2	0.618	1.000					
gdpcap	0.558	0.854	1.000				
inv	0.713	0.720	0.662	1.000			
inf	0.769	0.627	0.598	0.683	1.000		
open	0.629	0.734	0.727	0.710	0.641	1.000	
govsize	0.597	0.809	0.774	0.667	0.623	0.721	1.000

From the coincidence matrix above, the closest conditions to have some degree of overlap with the human development index set are investment ratio and inflations. Among the all the conditions the closest overlapping is between democracy and Log of GDP per capita [2000]. This reflects the reality that most of the countries that have a higher democracy index are also the one who have the highest per capita GDP. Similarly there is an overlap between government size [government consumption as percent of GDP] and democracy index.

Table 4.3: Sufficiency and Necessity Matrix

	hdi	polity2	gdpcap	inv	inf	open	govsize
govsize	0.601	0.792	0.744	0.679	0.609	0.693	1.000
open	0.658	0.710	0.689	0.724	0.654	1.000	0.691
inf	0.782	0.620	0.554	0.686	1.000	0.632	0.587
inv	0.719	0.699	0.633	1.000	0.677	0.691	0.646
gdpcap	0.553	0.830	1.000	0.668	0.577	0.693	0.747
polity2	0.565	1.000	0.709	0.630	0.552	0.611	0.679
hdi	1.000	0.619	0.517	0.710	0.762	0.619	0.564

Among the conditions the closest to be a sufficient condition is inflation rate [0.782] and likewise to be the necessary condition [0.762]. But since in both cases it doesn't meet the threshold, we cannot conclude that it is either sufficient or necessary condition. However, higher GDP per capita rate is a sufficient condition for democracy [0.83] but not a necessary condition [0.709]

4.4.1. Truth Table for the Presence of Outcome

Truth tables are used to evaluate the argument of causal sufficiency, based on the strength of the subset relationship where membership scores in the causal conditions are consistently less than or equal to the scores on the outcome. FsQCA generates a truth table from the fuzzy set data, with its rows representing causal configurations, and the 1 and 0 values in the cells indicating the individual conditions for which the cases have strong fuzzy set membership scores.

Table 4.4: Truth Table

polity2	gdpcap	inv	inf	open	govsize	number	hdi	rawconsist	priconsist	symconsist
0	0	1	0	0	1	1		0,987677991	0,940438986	0,940438986
0	0	1	0	0	0	3		0,98527801	0,943515003	0,943515003
0	0	1	1	1	0	5		0,983654022	0,924611986	0,93918997
0	0	1	1	0	1	2		0,981360018	0,917675972	0,917675018
1	0	1	1	1	0	2		0,980829	0,868098021	0,868098974
0	0	0	1	0	0	9		0,978787005	0,927536011	0,935672998
0	0	1	1	0	0	9		0,978116989	0,931258023	0,947229981
1	0	1	0	0	0	3		0,97625798	0,881516993	0,892087996
1	0	1	1	0	0	3		0,975650012	0,88499099	0,884989977
1	0	0	1	0	0	1		0,975323975	0,878601015	0,878600001
0	0	0	1	1	0	3		0,971844971	0,873637974	0,877462029
1	0	1	0	1	1	3		0,971153975	0,788734019	0,794327021
1	0	0	1	1	0	1		0,971060991	0,812501013	0,8125
0	0	0	0	0	0	3		0,970772028	0,875831008	0,891647995
0	0	0	0	1	0	3		0,969214022	0,840456009	0,857559025
1	0	0	0	1	0	1		0,967401981	0,759257972	0,759258986
0	0	1	0	1	1	1		0,966257989	0,793232024	0,793232977
1	0	0	0	0	0	3		0,965242028	0,812183022	0,812183022
0	1	1	1	0	0	1		0,964452028	0,714953005	0,714953005
0	0	0	1	0	1	2		0,956945002	0,836893022	0,836893022
1	0	1	1	1	1	4		0,954990983	0,743001997	0,77659601
0	0	1	1	1	1	2		0,95412302	0,755813003	0,758017004
0	1	0	0	0	1	1		0,941568017	0,300884992	0,311926007
0	1	1	0	1	1	1		0,941021979	0,569378018	0,569378018
1	0	0	1	0	1	3		0,937270999	0,720408022	0,720408976
0	0	0	0	1	1	1		0,936774015	0,61867702	0,61867702
1	0	0	1	1	1	2		0,935934007	0,639566004	0,644809008
0	0	0	1	1	1	2		0,928950012	0,70222199	0,70222199
1	1	0	1	0	0	4		0,922639012	0,434028	0,435539991
0	1	1	0	1	0	2		0,922242999	0,462500989	0,476395011
1	1	1	1	1	1	2		0,915270984	0,426667005	0,426667005
1	1	1	0	1	0	3		0,912061989	0,296155989	0,296155006
0	1	1	1	1	0	5		0,90820998	0,387832999	0,387832999
0	1	0	1	1	0	1		0,905592024	0,289591998	0,289593011
0	1	0	0	1	1	1		0,90426302	0,208093002	0,208093002
1	1	0	1	1	1	1		0,897381008	0,252918005	0,252918005
1	1	0	0	1	0	2		0,894105971	0,184615999	0,184615999
1	1	0	0	0	0	2		0,892039001	0,205127999	0,207406998
1	1	0	1	0	1	3		0,885833025	0,214286	0,222222999
0	1	0	1	1	1	1		0,884616017	0,296153992	0,296153992
1	1	1	0	1	1	11		0,766142011	0,132845998	0,134415999
1	1	1	0	0	1	4		0,758094013	0,103334002	0,103334002
1	1	0	0	1	1	5		0,739167988	0,064614996	0,064915001
1	1	0	0	0	1	11		0,691039979	0,031787999	0,031787999
1	1	1	1	1	0	0				
1	1	1	1	0	1	0				
1	1	1	1	0	0	0				
1	1	1	0	0	0	0				
1	1	0	1	1	0	0				
1	0	1	1	0	1	0				
1	0	1	0	1	0	0				
1	0	0	0	1	1	0				
1	0	0	0	0	0	0				
0	1	1	1	1	1	0				
0	1	1	1	0	1	0				
0	1	1	0	0	0	0				
0	1	1	0	0	0	0				
0	1	0	1	0	0	0				
0	1	0	1	0	0	0				
0	1	0	0	1	0	0				
0	0	1	0	0	0	0				
0	0	1	0	1	0	0				
0	0	0	0	0	1	0				

The truth table depicts the different corners of the vector space. The 1 and 0 identifies for the causal condition the different corners of the vector space. The number of cases with greater than 0.5 in the vector space corner is also generated. The columns next to the number is the consistency measure assessing the degree to which membership in each corner is a subset of membership in the outcome of the cases. The next step is to cut the truth table to a chosen frequency and consistency threshold. For a small N the usual frequency threshold is 1 or 2. If one has a larger-N then the frequency threshold can also increase. The consistency threshold as I discussed in the previous chapter could be 7.5, 8 or 9 depending how strict one wants to be. In my study I have tried to compare both in 8 and 9 a frequency threshold of 2 or 3. So every row that does not meet the criteria will be deleted and will have a reduced truth table².

Table 4.5: Reduced Truth Table

polity2	gdpcap	inv	inf	open	govsize	number	hdi	rawconsist	priconsist	symconsist
0	0	1	0	0	0	3	1	0,98527801	0,943515003	0,943515003
0	0	1	1	1	0	5	1	0,983654022	0,924611986	0,93918997
0	0	1	1	0	1	2	1	0,981360018	0,917675972	0,917675018
1	0	1	1	1	0	2	1	0,980829	0,868098021	0,868098974
0	0	0	1	0	0	9	1	0,978787005	0,927536011	0,935672998
0	0	1	1	0	0	9	1	0,978116989	0,931258023	0,947229981
1	0	1	0	0	0	3	1	0,97625798	0,881516993	0,892087996
1	0	1	1	0	0	3	1	0,975650012	0,88499099	0,884989977
0	0	0	1	1	0	3	1	0,971844971	0,873637974	0,877462029
1	0	1	0	1	1	3	1	0,971153975	0,788734019	0,794327021
0	0	0	0	0	0	3	1	0,970772028	0,875831008	0,891647995
0	0	0	0	1	0	3	1	0,969214022	0,840456009	0,857559025
1	0	0	0	0	0	3	1	0,965242028	0,812183022	0,812183022
0	0	0	1	0	1	2	1	0,956945002	0,836893022	0,836893022
1	0	1	1	1	1	4	1	0,954990983	0,743001997	0,77659601
0	0	1	1	1	1	2	1	0,95412302	0,755813003	0,758017004
1	0	0	1	0	1	3	1	0,937270999	0,720408022	0,720408976
1	0	0	1	1	1	2	1	0,935934007	0,639566004	0,644809008
0	0	0	1	1	1	2	1	0,928950012	0,70222199	0,70222199
1	1	0	1	0	0	4	1	0,922639012	0,434028	0,435539991
0	1	1	0	1	0	2	1	0,922242999	0,462500989	0,476395011
1	1	1	1	1	1	2	1	0,915270984	0,426667005	0,426667005
1	1	1	0	1	0	3	1	0,912061989	0,296155989	0,296155006
0	1	1	1	1	0	5	1	0,90820998	0,387832999	0,387832999
1	1	0	0	1	0	2	0	0,894105971	0,184615999	0,184615999
1	1	0	0	0	0	2	0	0,892039001	0,205127999	0,207406998
1	1	0	1	0	1	3	0	0,885833025	0,214286	0,222222999
1	1	1	0	1	1	11	0	0,766142011	0,132845998	0,134415999
1	1	1	0	0	1	4	0	0,758094013	0,103334002	0,103334002
1	1	0	0	1	1	5	0	0,739167988	0,064614996	0,064915001
1	1	0	0	0	1	11	0	0,691039979	0,031787999	0,031787999

To give an example, the first row states that there are two cases where absence of democracy, small government with an economy higher ratio of its

² Truth Tables are not probability distribution.

GDP is investment, closed trade activity with the outside and low inflation which causes of an outcome of development with consistency of 0.98.

Using Quine McCluskey [MQ] algorithm, the analysis of the truth table is obtained. The analysis involves a series of minimizations: from the truth table to the complex solution using matched cases, from the complex solution to the intermediate solution using simplifying assumptions that involve easy counterfactuals [Ragin, 2008b], and from the intermediate solution to the parsimonious solution using simplifying assumptions with hard counterfactuals.

My assumptions are based on theories and researches many have put in to the studies what effect they have one on another. For example, inflation has been debated that it might hinder or boost economic development in a developing country. When governments cannot collect enough revenue form the tax system, as many poor countries have a very big non-formal sector, then it might resort to inflation as an easy way of obtaining capital either for investment or benefit distribution. Similarly, the convergence theory is behind my assumption that countries with initial GDP per capita tend to grow faster than countries with higher one.

Hence, I assumed that a small government, an open economy, low initial GDP per capita, higher investment ratio/capital accumulation with or without both inflation and democracy can reach an outcome of development.

4.4.2. Complex Solution

The complex solution with a consistency cutoff of 0.8 has come up with eight solutions. Among these, there are democratic paths that arrive at the outcome with a consistency above 0.8. To put the results in verbally:

A case [country] with

Lower initial GDP per capita AND lower inflation AND less open AND a small government OR

A non democracy with lower GDP per capita, less investment ratio and a small government OR

A democracy with higher GDP per capita, lower investment ratio, higher inflation rate and less open OR

A non democracy with higher investment ratio, higher inflation, more open and smaller government OR

A democracy with lower investment ratio, higher inflation rate, less open and big government OR

A democracy with lower initial GDP per capita, high investment ratio, low inflation and small government


 Can cause development with consistency of 0.86 and coverage 0.76.

Table 4.6: Economic Activity Complex Solution

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f [polity2, gdpcap, inv, inf, open, govsize]			
Rows: 21			
Algorithm: Quine-McCluskey True: 1			
--- COMPLEX SOLUTION ---			
Frequency cutoff:	3.000000		
Consistency cutoff:	0.885833		
	raw coverage -----	unique coverage -----	consistency -----
~gdpcap*~inf*~open*~govsize	0.389027	0.008983	0.951978
~polity2*~gdpcap*~inv*~govsize	0.400497	0.062327	0.952976
~gdpcap*inv*~open*~govsize	0.445688	0.060669	0.963262
polity2*gdpcap*~inv*inf*~open	0.285793	0.007601	0.870370
~polity2*inv*inf*open*~govsize	0.289386	0.025152	0.922061
polity2*~inv*inf*~open*govsize	0.290354	0.007324	0.894804
polity2*~gdpcap*inv*open*govsize	0.327114	0.050995	0.949840
polity2*gdpcap*inv*~inf*open*~govsize	0.262300	0.015755	0.912062
Solution coverage:	0.763543		
Solution consistency:	0.860056		

Likewise, with restricted consistency theory we get the same result of combination conditions that result in democracy.

Countries like Argentina, Brazil, Turkey, Uruguay, South Africa, Dominican Republic, Malawi, Cape Verde, Timor Leste, Honduras, and Mauritius are some of the countries that showed an improvement in the Human Development Index yet follow the democratic path.

4.4.3. Parsimonious Solution

The second solution is the least complex one. It allows the incorporation of contradictors or remainders into the solution. The three pathways to development obtained through this solution are: smaller government, low initial GDP per capita and higher inflation. However when we choose restrictive rather than permissive consistency threshold, i.e. 0.9 instead of 0.8. Then we do not have inflation in the solution set and small government and low initial GDP are closer to the necessity condition. But in both cases, it has to be noted that government size is inconsistent with consistency of 0.676 and hence an inconsistent sufficient condition rather than a consistent one.

Table 4.7: Economic Activity Parsimonious Solution

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f[polity2, gdpcap, inv, inf, open, govsize]			
Rows: 21			
Algorithm: Quine-McCluskey True: 1-L			
--- PARSIMONIOUS SOLUTION ---			
Frequency cutoff:	3.000000		
Consistency cutoff:	0.885833		
	raw coverage -----	unique coverage -----	consistency -----
~govsize	0.764372	0.028331	0.767129
~gdpcap	0.878385	0.060254	0.878629
inf	0.761885	0.025705	0.782541
Solution coverage:	0.965727		
Solution consistency:	0.726026		

Meanwhile it is worthwhile to note that 87% of membership in the high HDI achievers is covered by being a member in having a lower initial GDP per capita and 76% with inflation.

4.4.4. Intermediate Solution

The last and the most important according to Ragin [2008] is the intermediate one. It uses subset of the simplifying assumptions that are used in the most parsimonious solution. Hence, it takes into consideration the extensive knowledge of the researcher about the subject matter at hand.

The assumptions of a small government, open economy, high investment ratio and lower initial GDP per capita are taken into consideration in this analysis.


Table 4.8: Economic Activity Intermediate Solution

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f [govsize, open, inf, inv, gdpcap, polity2] Rows: 90			
Algorithm: Quine-McCluskey True: 1 O Matrix: OL Don't Care: -			
--- INTERMEDIATE SOLUTION ---			
frequency cutoff:	3.000000		
consistency cutoff:	0.885833		
Assumptions:			
~govsize	[absent]		
open	[present]		
inv	[present]		
~gdpcap	[absent]		
	raw coverage -----	unique coverage -----	consistency -----
~govsize*~gdpcap	0.702736	0.193615	0.924377
inf*polity2	0.518657	0.038834	0.859006
~govsize*open*inf*inv	0.369265	0.006634	0.911634
open*inv*~gdpcap*polity2	0.387507	0.011609	0.955366
~govsize*open*inv*polity2	0.345080	0.011470	0.923106
Solution coverage:	0.821863		
Solution consistency:	0.831748		

At 0.8 cutting threshold it generated solutions all above 0.8 consistency level and with 0.886 solution consistency. These are:

Small Government size AND Low Initial GDP per capita OR

High Inflation AND Democratic OR
 Small Government AND Open AND High Investment AND High Inflation OR
 Open AND High Investment AND Lower Initial GDP per Capita AND Democratic OR
 Small Government AND Open AND high investment AND Democratic

 Can cause development with consistency of 0.83 and coverage 0.82.

70% of membership in the outcome development [change in HDI] is covered in the membership of the single path small government size [government consumption ratio] AND low initial log GDP per capita [2000].

Table 4.9: Economic Activity Intermediate Solution (Restrictive)

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f[govsize, open, inf, inv, gdpcap, polity2]			
Rows: 72			
Algorithm: Quine-McCluskey			
True: 1			
0 Matrix: OL			
Don't Care: -			
--- INTERMEDIATE SOLUTION ---			
Frequency cutoff:	3.000000		
consistency cutoff:	0.908210		
Assumptions:			
~govsize	[absent]		
open	[present]		
inv	[present]		
~gdpcap	[absent]		
	raw coverage -----	unique coverage -----	consistency -----
~govsize*~gdpcap	0.702736	0.193615	0.924377
inf*~gdpcap*polity2	0.491708	0.016031	0.931414
~govsize*inf*polity2	0.446656	0.013267	0.913252
~govsize*open*inf*inv	0.369265	0.006633	0.911634
open*inv*~gdpcap*polity2	0.387507	0.011609	0.955366
~govsize*open*inv*polity2	0.345080	0.011470	0.923106
Solution coverage:	0.812327		
Solution consistency:	0.847585		

As in the complex solution, democracy in combination of either open-

economy, low initial GDP per capita or smaller government are two paths that can lead to improvement in human development.

From the above results, we can observe that democracy in combination of other favorable economic activities is a path to more development, more than its absence.

4.5. Results based on human capital

In the human development causal analysis I used the conditions initial years of school attainment [yrssch], life expectancy [life] at birth, population growth [pop], income inequality [gini], in addition of course democracy [polity2].

In the analysis, I will use the consistency threshold of 0.8 and frequency threshold of 2.

4.5.1. Complex solution

From the solution we can observe that democracy has two paths. First, Democracy AND higher school attainment AND Longer life expectancy AND high income inequality AND urbanized. The second solution gives Democracy AND higher year school attainment AND higher life expectancy AND less population growth AND less income inequality AND less urbanization.

Table 4.10: Human Capital Complex Solution

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f [polity2, yrsch, life, popn, gini, urb] Rows: 16			
Algorithm: Quine-McCluskey True: 1			
--- COMPLEX SOLUTION ---			
frequency cutoff:	2.000000		
consistency cutoff:	0.838445		
	raw coverage -----	unique coverage -----	consistency -----
~yrsch*~life*popn*~urb	0.599637	0.131310	0.960116
~polity2*~yrsch*~life*gini*~urb	0.454800	0.004949	0.959958
~polity2*~yrsch*~life*popn*gini	0.453316	0.009733	0.957158
polity2*yrsch*life*gini*urb	0.323656	0.005609	0.811079
polity2*yrsch*popn*gini*urb	0.286869	0.001155	0.840909
polity2*life*popn*gini*urb	0.291653	-0.000000	0.844720
~polity2*yrsch*~life*~popn*~gini*~urb	0.239030	0.008083	0.973136
polity2*yrsch*life*~popn*~gini*~urb	0.293467	0.017981	0.864431
polity2*yrsch*~life*~popn*~gini*urb	0.283405	0.013362	0.946556
polity2*~yrsch*~life*~popn*gini*urb	0.314418	0.003794	0.965063
solution coverage:	0.824315		
solution consistency:	0.837860		

4.5.2. Parsimonious Solution

Incorporating the logical contradictory cases in the Parsimonious, however, made the result inconsistent and hence no interpretation of the solution is needed.

Table 4.11: Human Capital Parsimonious Solution

* TRUTH TABLE ANALYSIS *			

Model: hdi = f[polity2, yrsch, life, popn, gini, urb]			
Rows: 16			
Algorithm: Quine-McCluskey			
True: 1-L			
--- PARSIMONIOUS SOLUTION ---			
frequency cutoff:	2.000000		
consistency cutoff:	0.838445		
	raw coverage -----	unique coverage -----	consistency -----
~urb	0.831903	0.045035	0.859993
~life	0.847740	0.041405	0.870427
gini	0.697954	0.025569	0.728227
solution coverage:	0.959914		
solution consistency:	0.728650		

4.5.3. Intermediate Solution

In the intermediate solution I assumed that there is lower urbanization, lower income inequality, long life expectancy, longer school attainment and democracy. There is an argument that in a developing country high urbanization has both a negative and positive side effects. On one hand, the argument goes that with urbanization, there will be more roads and infrastructure to be built in fast urbanization places, and governments find it easier to deliver social services in a very central place than to a population scattered, therefore, better HDI. On another, evidence shows that in many cities in China and Brazil, urbanization has brought more income inequality and poverty to the slums that worsened life conditions.

The solution combination for human capital related activates to reach the outcome is:

Higher growth rate AND lower urbanization

OR

Lower urbanization AND longer school attainment AND democratic OR
 Higher income inequalities AND longer school attainment AND democratic
 Two of the three paths involve democracy.

Table 4.12: Human Capital Intermediate Solution

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f[urb, gini, popn, life, yrsch, polity2]			
Rows: 142			
Algorithm: Quine-McCluskey True: 1 O Matrix: OL Don't Care: -			
--- INTERMEDIATE SOLUTION ---			
frequency cutoff:	2.000000		
consistency cutoff:	0.838445		
Assumptions:			
~gini	[absent]		
life	[present]		
yrsch	[present]		
polity2	[present]		
	raw coverage -----	unique coverage -----	consistency -----
~urb	0.831903	0.072583	0.859993
popn*~life	0.695480	0.018806	0.920524
~life*polity2	0.565325	0.012372	0.925466
gini*popn	0.591884	0.003959	0.853676
gini*polity2	0.533982	0.006104	0.783019
solution coverage:	0.943418		
solution consistency:	0.771170		

4.6. Through other channels

The other channels taken into consideration here are Economic Freedom [econfree], stability [sta] and democracy [polity2]. But unfortunately their solutions are inconsistent and hence no path can be derived from it.

I found in my analysis there is a large degree of overlap between economic freedom and stability to HDI. In a fuzzy set coincidence should be closer to

zero than one, but in the case of freedom and stability it is closer to one. This creates limited diversity to explain consistently the outcome.

Assuming that both stability and economic freedom need to be present for economic development, we will have an intermediate solution:

Table 4.13: Other Channels Intermediate solution

***** * TRUTH TABLE ANALYSIS * *****			
Model: hdi = f[stab, econfree, polity2]			
Rows: 8			
Algorithm: Quine-McCluskey True: 1 O Matrix: OL Don't Care: -			
--- INTERMEDIATE SOLUTION ---			
frequency cutoff:	4.000000		
consistency cutoff:	0.874006		
Assumptions:			
stab	[present]		
econfree	[present]		
polity2	[present]		
	raw coverage -----	unique coverage -----	consistency -----
~polity2	0.651470	0.035033	0.807628
~econfree	0.829552	0.213114	0.782130
solution coverage:	0.864585		
solution consistency:	0.728753		

5. Conclusions

There is no general consensus in the empirical literature that the causality holds and that there is a causal effect of democracy on development. In my thesis, I argue that, there are paths for democracy leading to development in combination with other determinants of development; hence, it has a causality effect.

To that effect, I have tried to review the relevant literature and understand the findings. The differences in the literature I found include differences in definitions, direct and indirect effects, data set used and methodology. Most of the negative results emanates from the modernization theory that subscribes democracy should come first before development in order for democracy to sustain.

In my analysis I used fsQCA, a method usually used in the social sciences, to determine a causality relationship. I have provided an interpretation of my results and I found that there are many paths to arrive at development, using Human Development Index as proxy, through democracy. In interpreting and choosing my results, I have used the different notions in the literature review, more precisely, the many determinant of democracy and development both directly and indirectly.

One limitation that I faced in my research hence it could be an opening for further research is that how to use information in a panel data without losing relevant information in averaging or aggregating such data. Although it was not possible to do so within the scope of this thesis due to its limited length, there are new methods and suggestions in how to include panel data in fsQCA analysis. Another, the software capacity and analysis tools have also their limit.

Appendices

Data Used

countryname	hdi	polity2	fhi	gdpcap	inv	inf
AFGHANISTAN	2,461	-7,000	5,769		18,208	8,707
ANGOLA	2,605	-2,143	6,000	6,486	13,251	65,142
ALBANIA	0,686	8,000	3,077	7,085	27,998	3,062
UNITED ARAB EMIRATES	0,282	-8,000	6,000	10,448	22,606	7,266
ARGENTINA	0,551	8,000	2,077	8,949	17,847	15,525
ARMENIA	0,922	5,000	4,923	6,432	28,296	3,614
AUSTRALIA	0,294	10,000	1,000	9,984	27,076	3,469
AUSTRIA	0,413	10,000	1,000	10,107	24,051	1,713
AZERBAIJAN	1,208	-7,000	6,000	6,485	28,760	9,178
BURUNDI	2,289	4,500	4,846	4,871	18,749	13,914
BELGIUM	0,072	9,000	1,000	10,050	23,207	2,017
BENIN	1,525	6,571	2,154	5,827	20,699	3,019
BANGLADESH	1,617	3,857	3,615	5,875	25,447	6,710
BULGARIA	0,661	8,929	1,462	7,399	25,446	4,973
BAHRAIN	0,304	-7,571	5,538	9,515	24,357	7,202
BAHAMAS	0,231		1,000	9,964	25,903	1,431
BELIZE	0,626		1,000	8,157	20,134	1,566
BOLIVIA	0,634	7,857	2,615	6,896	16,003	6,813
BRAZIL	0,665	8,000	2,154	8,215	17,898	7,855
BARBADOS	0,313		1,000	9,365	16,770	1,703
BRUNEI	0,271		6,154	9,803	14,371	6,342
BOTSWANA	1,541	8,000	2,308	8,101	32,490	7,782
CENTRAL AFRICAN REPUBLIC	0,614	0,357	5,231	5,527	10,831	1,363
CANADA	0,305	10,000	1,000	10,087	22,516	2,394
SWITZERLAND	0,270	10,000	1,000	10,540	24,351	0,770
CHILE	0,678	9,571	1,231	8,543	22,567	5,456
CHINA	1,516	-7,000	7,000	6,856	43,375	3,919
CÔTE D IVOIRE	1,075	1,429	6,000	6,470	12,544	3,476
CAMEROON	1,178	-4,000	6,077	6,368	18,691	2,578
CONGO, DEM. R.	1,639	3,429	5,923	6,008	14,412	208,205
CONGO	0,917	-4,214	5,692	6,937	23,442	8,276
COLOMBIA	0,633	7,000	3,385	7,825	20,889	7,212
COSTA RICA	0,604	10,000	1,000	8,308	22,030	8,448
CAPE VERDE	0,811	9,857	1,000	7,106	45,530	1,399
CUBA	0,726	-7,000	7,000	7,917	10,982	2,451
CYPRUS	0,426	10,000	1,000	9,505	19,474	2,511
CZECH REP.	0,515	9,429	1,000	8,699	29,035	1,767
GERMANY	0,505	10,000	1,000	10,073	20,085	1,081
DOMINICA	0,288		1,000	8,481	17,101	3,148
DENMARK	0,366	10,000	1,000	10,333	21,371	2,261
DOMINICAN REP.	0,635	8,000	2,077	7,927	22,258	10,912
ALGERIA	0,946	0,571	6,000	7,454	34,870	8,866
ECUADOR	0,589	5,571	3,000	7,288	24,195	7,552
EGYPT	0,717	-4,071	5,923	7,320	18,238	8,654
SPAIN	0,391	10,000	1,000	9,602	26,288	2,451
ESTONIA	0,614	9,000	1,000	8,311	30,788	5,062
ETHIOPIA	3,350	-1,571	5,308	4,827	31,067	12,117

FINLAND	0,345	10,000	1,000	10,096	23,130	1,731
FIJI	0,549	0,071	5,231	7,638	20,638	2,952
FRANCE	0,327	9,000	1,000	10,020	22,392	1,593
GABON	0,496	-1,500	5,615	8,327	26,282	6,919
UNITED KINGDOM	0,249	10,000	1,000	10,177	17,883	2,369
GHANA	1,259	7,143	1,385	5,579	24,840	24,126
GAMBIA	1,079	-5,000	5,154	6,457	21,214	5,583
EQUATORIAL GUINEA	1,206	-5,000	6,923	7,610	74,781	13,495
GREECE	0,510	10,000	1,231	9,389	21,625	2,091
GUATEMALA	1,007	8,000	3,385	7,451	17,742	4,939
GUYANA	0,871	6,000	2,077	6,864	23,756	11,388
HONDURAS	0,784	7,000	3,308	7,038	26,969	7,798
CROATIA	0,637	8,643	1,692	8,501	24,833	3,200
HAITI	0,662	1,071	5,077	6,057	28,052	11,637
HUNGARY	0,432	10,000	1,000	8,437	23,748	5,053
INDONESIA	0,898	7,429	2,385	6,672	27,404	10,417
INDIA	1,487	9,000	2,000	6,125	32,681	5,755
IRELAND	0,323	10,000	1,000	10,170	22,690	2,037
IRAN	1,071	-3,786	6,000	7,337	33,956	17,173
IRAQ	0,452	-2,143	6,154		19,429	12,683
ICELAND	0,319		1,000	10,368	22,109	5,025
ISRAEL	0,344	10,000	1,000	9,948	19,752	1,898
ITALY	0,427	10,000	1,077	9,906	20,615	2,107
JAMAICA	0,491	9,000	2,000	8,155	24,437	9,284
JORDAN	0,426	-2,500	5,308	7,475	26,081	5,133
JAPAN	0,284	10,000	1,000	10,527	22,105	-1,259
KAZAKHSTAN	0,842	-5,714	6,000	7,114	27,014	13,817
KENYA	1,249	6,429	4,000	6,007	18,894	8,087
KYRGYZSTAN	0,522	1,714	5,385	5,633	23,395	10,460
CAMBODIA	1,754	2,000	6,000	5,700	18,413	3,392
KUWAIT	0,091	-7,000	4,154	9,893	15,994	8,550
LAO PDR	1,435	-7,000	7,000	5,772	24,733	8,801
LIBERIA	1,517	4,071	4,077	5,209	17,394	6,690
LIBYA	0,402	-5,500	6,538	8,787	17,458	15,356
SRI LANKA	0,766	4,786	3,846	6,751	26,218	9,674
LESOTHO	0,718	7,571	2,462	6,029	30,214	7,072
LITHUANIA	0,746	10,000	1,077	8,092	21,371	3,079
LUXEMBOURG	0,130	10,000	1,000	10,796	19,087	2,806
LATVIA	0,821	8,000	1,462	8,104	29,408	5,880
MOROCCO	1,233	-5,571	5,000	7,151	31,356	1,393
MOLDOVA	0,799	8,571	2,923	5,869	26,794	10,916
MADAGASCAR	0,728	5,143	3,923	5,506	22,136	9,375
MALDIVES	1,187		5,154	7,736	25,568	4,531
MEXICO	0,605	8,000	2,308	8,792	22,386	5,519
MALI	2,133	6,214	2,615	5,464	22,262	4,253
MALTA	0,566		1,000	9,247	17,007	3,010
MYANMAR	1,690	-6,214	6,846		11,447	18,568
MONGOLIA	1,427	10,000	1,846	6,162	40,071	13,530
MOZAMBIQUE	2,486	4,929	3,308	5,463	20,592	8,527
MAURITANIA	0,909	-3,500	5,615	5,990	31,742	8,149
MAURITIUS	0,903	10,000	1,000	8,259	24,298	4,885
MALAWI	1,501	5,643	3,538	5,037	20,458	18,526
MALAYSIA	0,584	4,286	4,308	8,295	23,444	3,732
NAMIBIA	0,887	6,000	2,000	7,630	22,572	7,832
NIGER	1,952	4,857	3,462	5,098	25,110	3,510

NICARAGUA	0,788	8,500	3,538	6,909	24,426	8,292
NETHERLANDS	0,354	10,000	1,000	10,164	21,017	1,963
NORWAY	0,277	10,000	1,000	10,531	22,289	4,952
NEPAL	1,420	2,571	4,308	5,468	28,895	7,755
NEW ZEALAND	0,318	10,000	1,000	9,509	21,738	2,573
PAKISTAN	1,302	0,000	5,231	6,243	16,976	11,326
PANAMA	0,593	9,000	1,077	8,244	21,698	3,064
PERU	0,602	8,714	2,000	7,580	21,428	3,219
PHILIPPINES	0,488	8,000	2,769	6,950	20,079	4,318
NORTH KOREA	0,650	-10,000	7,000			
PALAU	0,339		1,000	9,028		5,052
PAPUA NEW GUINEA	1,167	4,143	3,077	6,484	21,192	5,726
POLAND	0,479	9,857	1,000	8,409	21,159	3,010
PORTUGAL	0,407	10,000	1,000	9,350	22,626	2,273
PARAGUAY	0,608	7,857	3,231	7,334	16,009	8,122
QATAR	0,366	-10,000	6,000	10,306	34,199	10,383
ROMANIA	0,817	8,714	2,077	7,416	24,923	15,502
RUSSIA	0,635	5,000	5,692	7,480	21,925	15,389
RWANDA	3,350	-3,429	6,231	5,331	19,129	7,902
SAUDI ARABIA	0,899	-10,000	7,000	9,144	23,979	6,266
SUDAN	1,586	-4,000	7,000	5,876	25,184	15,966
SENEGAL	1,252	7,500	2,385	6,162	24,098	2,340
SINGAPORE	0,922	-2,000	4,769	10,077	26,313	1,215
SOLOMON ISLANDS	0,254	6,154	3,692	6,961	9,673	6,860
SIERRA LEONE	1,787	5,429	3,462	5,034	15,292	15,160
EL SALVADOR	0,670	7,357	2,000	7,698	15,568	2,920
SERBIA	0,340	8,000	2,429	6,769	22,388	20,570
SAO TOME & PRINCIPE	0,925		1,769	6,310	45,588	13,395
SLOVENIA	0,481	10,000	1,000	9,233	26,081	3,447
SLOVAKIA	0,515	9,571	1,000	8,595	26,494	2,975
SWEDEN	0,077	10,000	1,000	10,285	22,640	1,661
SWAZILAND	0,483	-9,000	6,769	7,268	14,071	8,013
SEYCHELLES	0,143		3,000	8,933	29,846	10,378
SYRIA	0,649	-7,286	7,000	7,074	20,487	6,951
CHAD	1,661	-2,000	6,462	5,117	31,257	6,372
TOGO	0,737	-2,714	5,308	5,584	16,338	3,294
THAILAND	0,825	5,786	3,692	7,585	26,470	2,762
TAJIKISTAN	1,072	-2,571	6,000	4,935	16,830	18,316
TIMOR LESTE	2,248	6,667	3,385	6,066	34,077	4,356
TONGA	0,370		4,308	7,563	24,842	5,529
TRINIDAD & TOBAGO	0,728	10,000	2,385	8,769	20,552	5,724
TUNISIA	0,772	-1,929	5,538	7,718	24,211	3,557
TURKEY	1,160	7,429	3,154	8,347	19,580	17,311
TANZANIA	2,042	-1,000	3,692	5,731	25,263	10,647
UGANDA	1,631	-2,071	5,308	5,542	23,470	8,875
UKRAINE	0,728	6,286	3,615	6,455	21,382	14,489
URUGUAY	0,501	10,000	1,000	8,835	18,694	7,606
UNITED STATES	0,262	10,000	1,000	10,504	21,181	2,077
VENEZUELA	0,926	3,143	3,923	8,476	24,185	27,740
VIETNAM	0,960	-7,000	7,000	6,072	32,373	10,046
YEMEN	1,219	-1,286	5,462	6,310	18,985	11,922
SOUTH AFRICA	0,357	9,000	1,538	8,039	19,004	7,312
ZAMBIA	2,193	5,571	3,615	5,876	29,878	15,034
ZIMBABWE	1,075	-1,929	6,308	6,282	10,331	8,099

countryname	trad	govsiz	yr_sch	life	pop	gini
AFGHANISTAN	81,134	11,536	2,857	54,849	3,031	27,820
ANGOLA	122,185	22,052		45,205	3,309	50,650
ALBANIA	75,690	10,045	9,479	74,272	-0,503	30,595
UNITED ARAB EMIRATES	134,089	7,511	8,432	74,406	8,375	
ARGENTINA	33,282	12,514	8,729	73,746	0,905	48,868
ARMENIA	69,435	11,503	10,435	71,277	-0,276	32,648
AUSTRALIA	41,162	17,552	11,074	79,234	1,433	34,075
AUSTRIA	95,051	19,338	8,974	78,127	0,423	29,505
AZERBAIJAN	90,694	10,100		66,758	1,180	23,095
BURUNDI	38,710	22,391	2,559	48,208	3,143	33,270
BELGIUM	147,330	22,690	10,289	77,722	0,639	33,140
BENIN	47,430	12,012	3,115	55,188	3,045	41,075
BANGLADESH	39,569	5,135	4,479	65,320	1,331	32,933
BULGARIA	105,529	17,044	9,275	71,663	-0,786	32,415
BAHRAIN	132,981	14,556	7,480	74,589	5,226	
BAHAMAS	92,799	12,907		72,254	1,797	
BELIZE	120,521	14,666	10,084	70,539	2,562	
BOLIVIA	67,420	14,738	8,289	62,955	1,776	54,713
BRAZIL	25,611	20,348	6,519	70,257	1,090	55,877
BARBADOS	91,619	16,775	8,814	73,019	0,478	
BRUNEI	105,345	21,644	8,219	76,031	1,805	
BOTSWANA	92,793	20,321	8,816	50,490	1,132	62,595
CENTRAL AFRICAN REPUBLIC	35,762	10,119	3,289	43,692	1,837	49,935
CANADA	68,279	20,376	10,948	79,237	1,015	33,778
SWITZERLAND	107,603	10,959	9,781	79,680	0,886	32,697
CHILE	68,335	11,481	9,069	76,759	1,024	52,918
CHINA	56,264	14,221	6,926	72,141	0,573	41,354
CÔTE D IVOIRE	87,419	8,046	3,868	46,454	1,795	42,330
CAMEROON	43,721	10,577	5,462	51,936	2,577	41,425
CONGO, DEM. R.	59,256	8,091	3,367	46,356	2,758	44,430
CONGO	136,660	13,789	5,672	52,302	2,708	43,745
COLOMBIA	35,927	16,272	6,902	70,987	1,488	56,330
COSTA RICA	90,432	15,285	7,705	77,734	1,697	49,252
CAPE VERDE	94,827	17,896		69,591	0,993	47,170
CUBA	34,497	34,713	8,909	76,669	0,105	
CYPRUS	99,206	18,214	9,937	77,972	1,496	
CZECH REP.	120,253	20,060	12,694	74,968	0,158	26,530
GERMANY	73,315	18,666	10,062	77,927	-0,127	30,850
DOMINICA	86,043	16,435			0,212	
DENMARK	92,376	25,515	10,769	76,593	0,383	25,380
DOMINICAN REP.	66,767	8,683	6,981	70,633	1,420	49,638
ALGERIA	67,143	15,270	5,670	68,930	1,614	
ECUADOR	57,386	11,531	7,096	73,357	1,768	51,734
EGYPT	51,420	11,771	6,027	68,591	1,654	31,883
SPAIN	55,659	18,247	8,926	78,966	1,107	34,120
ESTONIA	139,715	18,235	11,408	70,417	-0,332	33,597
ETHIOPIA	43,188	14,357		52,241	2,736	31,715
FINLAND	76,135	22,107	9,089	77,466	0,369	27,855
FIJI	124,609	16,585	9,764	67,606	0,628	44,820
FRANCE	54,402	22,977	9,745	79,056	0,616	31,465
GABON	91,466	9,619	7,019	59,688	2,392	42,190
UNITED KINGDOM	56,636	20,087	9,916	77,741	0,631	37,913
GHANA	89,348	12,795	6,436	56,988	2,449	42,760
GAMBIA	66,808	8,953	2,638	55,171	3,130	47,280

EQUATORIAL GUINEA	211,336	4,857		47,764	2,932	
GREECE	54,863	19,871	8,892	77,888	0,095	34,195
GUATEMALA	63,391	9,377	4,096	67,741	2,473	53,975
GUYANA	201,050	19,878	8,130	63,485	0,543	
HONDURAS	122,794	15,902	5,651	70,484	2,015	56,465
CROATIA	82,097	19,345	9,714	72,808	-0,279	31,218
HAITI	60,527	8,177	4,326	57,423	1,440	59,210
HUNGARY	145,447	21,503	11,201	71,246	-0,244	28,472
INDONESIA	56,547	8,312	5,152	67,251	1,381	34,314
INDIA	42,092	11,308	5,032	62,162	1,430	33,627
IRELAND	163,599	16,905	10,664	76,537	1,446	32,700
IRAN	50,613	12,829	7,310	69,608	1,267	38,280
IRAQ	98,054	18,108	5,902	70,830	2,669	29,070
ICELAND	83,586	23,859	9,671	79,654	1,104	27,810
ISRAEL	72,912	23,790	11,341	78,954	1,961	41,255
ITALY	51,358	19,267	8,784	79,778	0,405	36,058
JAMAICA	90,954	14,912	9,142	70,471	0,379	54,340
JORDAN	125,107	21,690	8,360	71,780	2,302	34,770
JAPAN	27,674	18,836	10,942	81,076	0,040	32,110
KAZAKHSTAN	87,244	11,269	10,542	65,517	0,943	30,259
KENYA	55,783	15,541	5,687	52,840	2,680	47,680
KYRGYZSTAN	114,886	18,159	9,396	68,559	1,192	33,799
CAMBODIA	125,636	5,288	3,495	61,887	1,682	35,328
KUWAIT	91,503	18,057	6,094	73,355	4,404	
LAO PDR	76,598	8,903	4,251	61,644	1,751	34,717
LIBERIA	110,945	11,287	3,491	52,409	3,205	38,160
LIBYA	84,670	14,436	6,787	71,966	1,407	
SRI LANKA	68,158	13,768	10,241	71,157	0,758	39,240
LESOTHO	174,191	36,459	6,212	47,183	0,858	52,855
LITHUANIA	119,536	19,950	9,494	72,020	-1,252	33,945
LUXEMBOURG	310,477	16,074	9,553	77,873	1,663	
LATVIA	101,657	18,881	9,339	70,315	-1,229	35,462
MOROCCO	72,694	18,394	3,822	68,139	1,081	40,755
MOLDOVA	130,241	18,679	9,209	66,898	-0,175	34,484
MADAGASCAR	69,725	9,336		58,473	2,906	42,327
MALDIVES	163,395	18,187	4,257	69,462	1,819	37,370
MEXICO	56,632	11,247	7,663	74,265	1,276	48,791
MALI	66,649	11,512	1,233	49,055	3,055	37,340
MALTA	169,674	20,007	9,784	78,200	0,613	
MYANMAR	0,670		3,690	62,024	0,754	
MONGOLIA	121,161	14,001	7,884	62,924	1,271	34,680
MOZAMBIQUE	70,614	14,335	1,080	47,425	2,661	46,385
MAURITANIA	101,077	21,096	3,545	59,673	2,802	40,253
MAURITIUS	120,285	13,859	6,702	71,663	0,490	35,790
MALAWI	72,834	16,616	3,478	46,034	2,828	43,045
MALAYSIA	186,795	12,273	9,086	72,851	1,863	43,373
NAMIBIA	98,967	22,907	5,717	55,121	1,538	62,610
NIGER	53,308	14,542	1,380	50,706	3,718	37,323
NICARAGUA	77,027	7,899	5,507	69,647	1,367	43,087
NETHERLANDS	131,157	23,878	10,806	77,988	0,435	30,107
NORWAY	71,157	20,829	11,023	78,634	0,927	27,763
NEPAL	46,741	9,320	2,973	62,043	1,450	38,325
NEW ZEALAND	61,060	18,535	11,761	78,637	1,050	
PAKISTAN	32,538	9,433	3,871	63,886	1,850	30,792
PANAMA	141,622	12,385	8,736	75,117	1,823	54,000

PERU	45,910	11,087	8,850	70,505	1,219	48,955
PHILIPPINES	85,396	10,016	7,869	66,797	1,843	44,124
NORTH KOREA				64,983	0,678	
PALAU	118,342			70,494	0,733	
PAPUA NEW GUINEA	121,291	15,743	3,477	58,799	2,388	
POLAND	75,706	18,478	10,257	73,749	-0,027	33,665
PORTUGAL	67,447	19,953	7,432	76,315	0,165	
PARAGUAY	97,418	10,103	6,231	70,077	1,863	52,546
QATAR	91,333	14,615	6,605	76,820	9,518	
ROMANIA	76,924	7,640	10,042	71,163	-0,839	29,247
RUSSIA	55,333	17,855	10,905	65,341	-0,183	38,440
RWANDA	37,540	14,534	3,233	47,643	2,894	51,807
SAUDI ARABIA	80,371	22,348	7,080	72,615	2,749	
SUDAN	35,341	11,514	2,817	57,978	2,412	35,290
SENEGAL	68,508	14,042	1,918	57,774	2,749	40,250
SINGAPORE	384,659	10,490	9,152	77,951	2,217	
SOLOMON ISLANDS	93,559	28,169		62,837	2,395	
SIERRA LEONE	54,133	11,062	2,785	38,112	2,951	37,410
EL SALVADOR	70,405	10,286	6,587	69,559	0,479	47,471
SERBIA	72,610	20,473	8,998	71,583	-0,366	30,842
SAO TOME & PRINCIPE	68,761	19,247		63,293	2,427	42,345
SLOVENIA	122,066	19,124	11,351	75,412	0,272	26,720
SLOVAKIA	149,519	18,622	11,203	73,051	0,023	27,629
SWEDEN	84,446	25,156	11,377	79,644	0,575	26,780
SWAZILAND	153,656	15,818	4,438	48,664	1,255	52,440
SEYCHELLES	182,702	34,696			0,739	65,770
SYRIA	71,978	12,960	4,579	73,330	2,546	35,780
CHAD	82,807	6,529		46,687	3,369	41,540
TOGO	91,998	10,126	4,751	53,545	2,594	44,095
THAILAND	136,938	12,204	5,655	70,917	0,599	41,410
TAJIKISTAN	106,455	10,527	10,628	63,772	2,126	32,320
TIMOR LESTE	136,349	102,609		59,481	2,358	30,410
TONGA	71,813	17,681	9,367	70,760	0,554	
TRINIDAD & TOBAGO	99,858	11,905	9,515	68,598	0,419	
TUNISIA	96,132	17,044	5,897	72,600	1,006	38,110
TURKEY	50,498	13,112	6,103	69,998	1,325	40,077
TANZANIA	47,024	15,451	4,733	49,972	2,821	36,673
UGANDA	43,803	12,648	4,325	48,109	3,351	44,310
UKRAINE	106,004	19,000	10,454	67,860	-0,628	28,086
URUGUAY	53,048	12,363	8,073	74,660	0,209	45,684
UNITED STATES	26,533	15,481	12,638	76,637	0,891	40,870
VENEZUELA	50,465	12,326	6,714	72,444	1,706	47,678
VIETNAM	135,840	5,803	5,645	73,631	1,129	36,758
YEMEN	75,163	13,560	2,340	60,458	2,568	35,910
SOUTH AFRICA	58,204	19,154	7,680	55,837	1,527	63,333
ZAMBIA	65,721	2,804	6,160	41,783	2,789	51,235
ZIMBABWE	83,890	14,819	7,003	43,922	0,952	

countryname	urb	lang	rel	econfree	rol	stab
AFGHANISTAN	23,477	0,614	0,272		-1,816	-1,357
ANGOLA	37,382	0,787	0,628		-1,389	0,789
ALBANIA	48,396	0,040	0,472	5,458	-0,713	
UNITED ARAB EMIRATES	82,745	0,487	0,331	7,565	0,520	0,396
ARGENTINA	90,333	0,062	0,224	7,195	-0,657	
ARMENIA	63,938	0,129	0,458		-0,406	0,894
AUSTRALIA	88,206	0,335	0,821	7,982	1,753	-0,651
AUSTRIA	65,834	0,152	0,415	7,415	1,855	0,982
AZERBAIJAN	52,705	0,205	0,490		-0,827	-0,303
BURUNDI	9,786	0,298	0,516	5,142	-1,232	-0,528
BELGIUM	97,465	0,541	0,213	7,441	1,325	0,459
BENIN	40,594	0,791	0,554	5,658	-0,566	0,848
BANGLADESH	27,975	0,092	0,209	5,449	-0,871	0,091
BULGARIA	71,092	0,303	0,597	5,337	-0,137	-1,613
BAHRAIN	88,464	0,434	0,553	7,289	0,510	0,943
BAHAMAS	82,363	0,185	0,681	6,381	1,033	-1,246
BELIZE	45,924	0,630	0,581	6,174	-0,228	0,803
BOLIVIA	64,834	0,224	0,208	6,690	-0,833	0,899
BRAZIL	83,257	0,047	0,605	5,597	-0,274	0,227
BARBADOS	32,692	0,093	0,693	5,551	1,204	0,879
BRUNEI	74,032	0,344	0,440		0,557	-0,070
BOTSWANA	55,367	0,411	0,599	6,962	0,618	1,177
CENTRAL AFRICAN REPUBLIC	38,379	0,833	0,792	4,868	-1,457	0,417
CANADA	80,434	0,577	0,696	8,103	1,741	1,082
SWITZERLAND	73,534	0,544	0,608	8,210	1,836	0,723
CHILE	87,737	0,187	0,384	7,492	1,287	-1,643
CHINA	44,513	0,133	0,664	5,396	-0,431	-0,455
CÔTE D IVOIRE	48,027	0,784	0,755	5,745	-1,321	0,248
CAMEROON	49,424	0,890	0,734	5,419	-1,126	0,769
CONGO, DEM. R.	38,239	0,870	0,702	3,671	-1,651	
CONGO	61,647	0,687	0,664	4,916	-1,218	0,582
COLOMBIA	74,006	0,019	0,148	5,527	-0,557	-2,140
COSTA RICA	67,350	0,049	0,241	7,252	0,494	0,534
CAPE VERDE	58,891		0,077		0,425	-1,561
CUBA	76,228		0,506		-0,810	0,860
CYPRUS	68,024	0,396	0,396	6,144	1,038	1,056
CZECH REP.	73,501	0,323	0,659	6,845	0,870	-0,107
GERMANY	73,769	0,164	0,657	7,608	1,650	0,331
DOMINICA	67,055		0,463		0,659	-0,597
DENMARK	86,145	0,105	0,233	7,612	1,915	0,879
DOMINICAN REP.	69,284	0,039	0,312	6,775	-0,668	-0,737
ALGERIA	64,877	0,443	0,009	4,219	-0,721	1,177
ECUADOR	61,966	0,131	0,142	5,246	-0,991	0,013
EGYPT	42,983	0,024	0,198	6,657	-0,145	-0,121
SPAIN	77,627	0,413	0,451	7,310	1,153	
ESTONIA	68,542	0,494	0,498	7,025	0,999	0,159
ETHIOPIA	16,324	0,807	0,625		-0,741	1,314
FINLAND	83,094	0,141	0,253	7,632	1,943	0,260
FIJI	50,454	0,548	0,568	6,015	-0,490	0,480
FRANCE	77,485	0,122	0,403	6,970	1,412	0,310
GABON	83,883	0,782	0,667	5,269	-0,481	-0,768
UNITED KINGDOM	80,328	0,053	0,694	8,350	1,671	0,773
GHANA	48,332	0,673	0,799	5,623	-0,034	
GAMBIA	53,404	0,808	0,097		-0,333	0,819

EQUATORIAL GUINEA	39,038	0,322	0,120		-1,315	0,619
GREECE	74,997	0,030	0,153	6,818	0,705	0,501
GUATEMALA	47,841	0,459	0,375	6,336	-1,068	-0,645
GUYANA	28,361	0,069	0,788	6,055	-0,573	-0,460
HONDURAS	49,470	0,055	0,236	6,300	-0,946	0,746
CROATIA	56,813	0,076	0,445	5,464	0,075	0,476
HAITI	46,288		0,470	6,313	-1,527	0,892
HUNGARY	67,206	0,030	0,524	6,562	0,813	-1,052
INDONESIA	47,134	0,768	0,234	5,948	-0,712	-2,220
INDIA	29,763	0,807	0,326	6,110	0,045	-1,083
IRELAND	60,889	0,031	0,155	8,133	1,655	0,528
IRAN	68,385	0,746	0,115	5,076	-0,814	0,993
IRAQ	68,854	0,369	0,484		-1,658	-1,347
ICELAND	93,201	0,082	0,191	7,674	1,813	-1,100
ISRAEL	91,609	0,552	0,347	6,735	0,902	-0,260
ITALY	67,921	0,115	0,303	7,057	0,483	0,951
JAMAICA	53,088	0,110	0,616	6,991	-0,448	
JORDAN	81,549	0,040	0,066	7,196	0,342	-1,199
JAPAN	86,713	0,018	0,541	7,300	1,289	-0,270
KAZAKHSTAN	54,452	0,662	0,590		-0,834	
KENYA	22,271	0,886	0,777	6,538	-0,918	-0,070
KYRGYZSTAN	35,317	0,595	0,447		-1,107	0,477
CAMBODIA	19,387	0,210	0,096		-1,098	0,913
KUWAIT	98,210	0,344	0,674	6,979	0,557	-0,281
LAO PDR	29,145	0,638	0,545		-0,973	-1,214
LIBERIA	46,588	0,904	0,488		-1,284	1,289
LIBYA	77,163	0,076	0,057		-0,948	0,562
SRI LANKA	18,365	0,464	0,485	6,067	0,063	0,782
LESOTHO	22,962	0,254	0,721		-0,193	-0,059
LITHUANIA	66,751	0,322	0,414	6,374	0,621	0,802
LUXEMBOURG	87,110	0,644	0,091	7,647	1,804	-0,568
LATVIA	67,812	0,580	0,556	6,659	0,625	0,127
MOROCCO	56,034	0,468	0,003	5,920	-0,142	-1,113
MOLDOVA	45,220	0,553	0,560		-0,467	0,666
MADAGASCAR	30,007	0,020	0,519	5,203	-0,519	0,156
MALDIVES	35,617				-0,109	1,205
MEXICO	76,747	0,151	0,180	6,149	-0,505	-0,312
MALI	33,280	0,839	0,182	5,653	-0,355	
MALTA	93,893	0,091	0,122	6,384	1,435	0,817
MYANMAR	29,771	0,507	0,197	3,370	-1,480	
MONGOLIA	63,941	0,373	0,080		-0,226	-0,371
MOZAMBIQUE	30,310	0,812	0,676		-0,636	0,612
MAURITANIA	54,118	0,326	0,015		-0,727	-0,553
MAURITIUS	41,312	0,455	0,638	7,306	0,948	
MALAWI	15,219	0,602	0,819	4,500	-0,225	0,345
MALAYSIA	67,816	0,597	0,666	6,656	0,499	-0,157
NAMIBIA	38,218	0,701	0,663	6,266	0,178	-1,549
NIGER	17,040	0,652	0,201	5,480	-0,679	
NICARAGUA	56,364	0,047	0,429	6,447	-0,753	-1,752
NETHERLANDS	83,628	0,514	0,722	7,982	1,767	
NORWAY	78,085	0,067	0,205	7,237	1,914	-1,907
NEPAL	15,687	0,717	0,142	5,647	-0,729	
NEW ZEALAND	86,046	0,166	0,811	8,204	1,849	-0,486
PAKISTAN	35,355	0,719	0,385	5,455	-0,855	-0,200
PANAMA	64,100	0,387	0,334	7,275	-0,150	-0,740

PERU	75,570	0,336	0,199	6,823	-0,647	0,546
PHILIPPINES	46,221	0,836	0,306	7,072	-0,497	0,818
NORTH KOREA	59,942	0,003	0,489		-1,151	
PALAU	78,930	0,316	0,715		0,846	-0,594
PAPUA NEW GUINEA	13,083	0,353	0,552	5,893	-0,978	-0,925
POLAND	61,259	0,047	0,171	5,742	0,568	0,432
PORTUGAL	58,419	0,020	0,144	7,286	1,100	1,042
PARAGUAY	57,590	0,598	0,212	6,306	-0,995	-1,381
QATAR	97,780	0,480	0,095		0,758	0,202
ROMANIA	53,420	0,172	0,237	4,743	-0,081	-0,673
RUSSIA	73,546	0,249	0,440	4,492	-0,876	0,952
RWANDA	20,768		0,507	4,612	-0,624	
SAUDI ARABIA	81,304	0,095	0,127		0,161	-0,579
SUDAN	32,885	0,719	0,431		-1,366	-0,312
SENEGAL	41,532	0,696	0,150	5,806	-0,208	0,782
SINGAPORE	100,000	0,384	0,656	8,565	1,635	1,022
SOLOMON ISLANDS	18,534	0,525	0,671		-0,852	-0,056
SIERRA LEONE	37,310	0,763	0,540	5,195	-1,068	0,820
EL SALVADOR	62,413		0,356	7,204	-0,660	-0,718
SERBIA	54,601				-0,646	-0,465
SAO TOME & PRINCIPE	59,023	0,232	0,187		-0,576	-0,231
SLOVENIA	50,341	0,220	0,287	6,006	0,958	-2,618
SLOVAKIA	55,250	0,255	0,565	5,885	0,455	0,166
SWEDEN	84,629	0,197	0,234	7,358	1,890	-0,647
SWAZILAND	21,909	0,172	0,444		-0,643	1,174
SEYCHELLES	51,506	0,161	0,232		0,133	1,142
SYRIA	54,366	0,182	0,431	4,958	-0,647	-1,267
CHAD	21,874	0,864	0,641	5,322	-1,384	-0,529
TOGO	35,905	0,898	0,660	5,028	-0,920	-0,103
THAILAND	39,550	0,634	0,099	6,642	0,007	-0,517
TAJIKISTAN	26,483	0,547	0,339		-1,186	-0,863
TIMOR LESTE	27,484	0,526	0,425		-1,007	
TONGA	23,244	0,378	0,621		0,174	0,027
TRINIDAD & TOBAGO	9,676	0,125	0,794	7,149	-0,073	-0,802
TUNISIA	65,207	0,012	0,010	6,058	0,025	0,062
TURKEY	68,630	0,222	0,005	5,729	0,067	
TANZANIA	25,937	0,898	0,633	5,794	-0,415	-0,510
UGANDA	13,544	0,923	0,633	6,425	-0,472	0,752
UKRAINE	68,091	0,474	0,616	4,488	-0,821	0,322
URUGUAY	93,605	0,082	0,355	6,650	0,552	1,153
UNITED STATES	80,177	0,251	0,824	8,534	1,557	-1,100
VENEZUELA	88,591	0,069	0,135	5,776	-1,440	
VIETNAM	28,254	0,238	0,508		-0,448	-1,583
YEMEN	29,800	0,008	0,002		-1,190	-1,212
SOUTH AFRICA	60,335	0,865	0,860	6,725	0,095	-0,038
ZAMBIA	37,276	0,873	0,736	6,311	-0,482	0,389
ZIMBABWE	33,693	0,447	0,736	4,794	-1,695	-0,690

Fuzzied/Calibrated Data

Country name	Country code	hdi	polity2	fhi	gdpcap	inv	inf
AFGHANISTAN	AFG	0,97	0,07	0,8		0,18	0,71
ANGOLA	AGO	0,99	0,23	0,86	0,31	0,04	0,99
ALBANIA	ALB	0,5	0,7	0,43	0,4	0,83	0,26
UNITED ARAB EMIRATES	ARE	0,08	0,02	0,86	0,97	0,52	0,58
ARGENTINA	ARG	0,35	0,7	0,29	0,75	0,16	0,93
ARMENIA	ARM	0,67	0,47	0,65	0,27	0,84	0,34
AUSTRALIA	AUS	0,1	1	0	0,87	0,82	0,32
AUSTRIA	AUT	0,23	1	0	0,91	0,6	0,08
AZERBAIJAN	AZE	0,78	0,07	0,86	0,3	0,85	0,74
BURUNDI	BDI	0,97	0,43	0,64	0,01	0,21	0,88
BELGIUM	BEL	0	0,82	0	0,88	0,55	0,11
BENIN	BEN	0,87	0,57	0,31	0,14	0,33	0,25
BANGLADESH	BGD	0,89	0,4	0,53	0,15	0,73	0,53
BULGARIA	BGR	0,47	0,78	0,2	0,46	0,72	0,41
BAHRAIN	BHR	0,1	0,03	0,76	0,82	0,65	0,56
BAHAMAS	BHS	0,03		0	0,86	0,74	0,05
BELIZE	BLZ	0,42		0	0,61	0,29	0,05
BOLIVIA	BOL	0,43	0,65	0,38	0,35	0,08	0,53
BRAZIL	BRA	0,48	0,7	0,31	0,62	0,17	0,63
BARBADOS	BRB	0,12		0	0,79	0,1	0,07
BRUNEI	BRN	0,06		0,91	0,83	0,05	0,51
BOTSWANA	BWA	0,88	0,7	0,33	0,59	0,93	0,61
CENTRAL AFRICAN REPUBLIC	CAF	0,41	0,33	0,69	0,09	0,01	0,03
CANADA	CAN	0,11	1	0	0,9	0,5	0,17
SWITZERLAND	CHE	0,06	1	0	0,99	0,64	0,01
CHILE	CHL	0,5	0,86	0,18	0,7	0,5	0,45
CHINA	CHN	0,86	0,07	1	0,34	0,98	0,36
CÔTE D IVOIRE	CIV	0,73	0,35	0,86	0,29	0,03	0,32
CAMEROON	CMR	0,76	0,17	0,9	0,26	0,2	0,2
CONGO, DEM. R.	COD	0,9	0,39	0,81	0,19	0,06	1
CONGO	COG	0,66	0,15	0,79	0,36	0,56	0,68
COLOMBIA	COL	0,43	0,59	0,48	0,56	0,34	0,57
COSTA RICA	CRI	0,39	1	0	0,64	0,43	0,69
CAPE VERDE	CSS	0,59	0,87	0	0,4	0,99	0,04
CUBA	CUB	0,52	0,07	1	0,56	0,02	0,18
CYPRUS	CYP	0,23	1	0	0,81	0,25	0,19
CZECH REP.	CZE	0,33	0,85	0	0,72	0,86	0,09
GERMANY	DEU	0,31	1	0	0,89	0,28	0,01
DOMINICA	DMA	0,09		0	0,69	0,13	0,28
DENMARK	DNK	0,19	1	0	0,95	0,39	0,14
DOMINICAN REP.	DOM	0,44	0,7	0,29	0,57	0,46	0,81

ALGERIA	DZA	0,7	0,34	0,86	0,48	0,97	0,73
ECUADOR	ECU	0,37	0,5	0,41	0,43	0,62	0,59
EGYPT	EGY	0,51	0,16	0,81	0,44	0,18	0,71
SPAIN	ESP	0,21	1	0	0,83	0,77	0,18
ESTONIA	EST	0,41	0,82	0	0,65	0,9	0,44
ETHIOPIA	ETH	0,99	0,28	0,72	0	0,9	0,84
FINLAND	FIN	0,17	1	0	0,91	0,54	0,08
FIJI	FJI	0,34	0,32	0,69	0,53	0,33	0,23
FRANCE	FRA	0,14	0,82	0	0,87	0,49	0,06
GABON	GAB	0,3	0,29	0,77	0,66	0,76	0,55
UNITED KINGDOM	GBR	0,04	1	0	0,93	0,16	0,16
GHANA	GHA	0,81	0,6	0,19	0,1	0,68	0,98
GAMBIA	GMB	0,74	0,14	0,68	0,28	0,37	0,47
EQUATORIAL GUINEA	GNQ	0,77	0,14	0,97	0,52	1	0,86
GREECE	GRC	0,32	1	0,18	0,8	0,41	0,13
GUATEMALA	GTM	0,71	0,7	0,48	0,47	0,15	0,4
GUYANA	GUY	0,63	0,53	0,29	0,34	0,59	0,82
HONDURAS	HND	0,57	0,59	0,46	0,38	0,8	0,62
CROATIA	HRV	0,45	0,76	0,22	0,7	0,67	0,29
HAITI	HTI	0,48	0,35	0,66	0,2	0,84	0,83
HUNGARY	HUN	0,25	1	0	0,68	0,58	0,43
INDONESIA	IDN	0,64	0,62	0,35	0,32	0,82	0,79
INDIA	IND	0,85	0,82	0,26	0,22	0,94	0,49
IRELAND	IRL	0,14	1	0	0,93	0,54	0,12
IRAN	IRN	0,72	0,18	0,86	0,45	0,95	0,94
IRAQ	IRQ	0,26	0,23	0,91		0,25	0,85
ICELAND	ISL	0,13		0	0,96	0,44	0,42
ISRAEL	ISR	0,16	1	0	0,85	0,27	0,1
ITALY	ITA	0,25	1	0,16	0,85	0,32	0,14
JAMAICA	JAM	0,29	0,82	0,26	0,6	0,66	0,75
JORDAN	JOR	0,24	0,22	0,72	0,48	0,75	0,44
JAPAN	JPN	0,08	1	0	0,98	0,44	0
KAZAKHSTAN	KAZ	0,62	0,11	0,86	0,41	0,81	0,88
KENYA	KEN	0,8	0,56	0,59	0,18	0,22	0,65
KYRGYZSTAN	KGZ	0,34	0,36	0,74	0,11	0,56	0,79
CAMBODIA	KHM	0,92	0,37	0,86	0,12	0,19	0,31
KUWAIT	KWT	0,01	0,07	0,6	0,84	0,08	0,7
LAO PDR	LAO	0,84	0,07	1	0,13	0,67	0,72
LIBERIA	LBR	0,86	0,41	0,6	0,05	0,14	0,52
LIBYA	LBY	0,21	0,13	0,94	0,73	0,14	0,91
SRI LANKA	LKA	0,56	0,44	0,57	0,32	0,76	0,76
LESOTHO	LSO	0,52	0,64	0,37	0,19	0,89	0,56
LITHUANIA	LTU	0,55	1	0,16	0,58	0,38	0,27
LUXEMBOURG	LUX	0,02	1	0	1	0,24	0,21
LATVIA	LVA	0,61	0,7	0,2	0,6	0,87	0,49

MOROCCO	MAR	0,79	0,12	0,66	0,42	0,92	0,03
MOLDOVA	MDA	0,59	0,75	0,4	0,15	0,8	0,81
MADAGASCAR	MDG	0,54	0,48	0,58	0,08	0,45	0,75
MALDIVES	MDV	0,77		0,68	0,55	0,73	0,38
MEXICO	MEX	0,39	0,7	0,33	0,74	0,48	0,45
MALI	MLI	0,95	0,55	0,38	0,07	0,46	0,36
MALTA	MLT	0,35		0	0,78	0,12	0,25
MYANMAR	MMR	0,92	0,1	0,96		0,03	0,97
MONGOLIA	MNG	0,83	1	0,23	0,23	0,97	0,87
MOZAMBIQUE	MOZ	0,98	0,45	0,46	0,06	0,31	0,69
MAURITANIA	MRT	0,66	0,19	0,77	0,17	0,92	0,67
MAURITIUS	MUS	0,65	1	0	0,63	0,63	0,39
MALAWI	MWI	0,85	0,51	0,51	0,03	0,29	0,96
MALAYSIA	MYS	0,36	0,42	0,62	0,64	0,57	0,35
NAMIBIA	NAM	0,63	0,53	0,26	0,52	0,51	0,62
NIGER	NER	0,94	0,45	0,49	0,03	0,7	0,33
NICARAGUA	NIC	0,58	0,75	0,51	0,36	0,65	0,68
NETHERLANDS	NLD	0,17	1	0	0,92	0,35	0,1
NORWAY	NOR	0,07	1	0	0,99	0,47	0,4
NEPAL	NPL	0,83	0,38	0,62	0,07	0,86	0,6
NEW ZEALAND	NZL	0,12	1	0	0,81	0,42	0,19
PAKISTAN	PAK	0,82	0,31	0,69	0,24	0,12	0,82
PANAMA	PAN	0,37	0,82	0,16	0,62	0,41	0,27
PERU	PER	0,38	0,77	0,26	0,5	0,4	0,29
PHILIPPINES	PHL	0,28	0,7	0,39	0,37	0,27	0,37
NORTH KOREA	PKR	0,46	0	1			
PALAU	PLW	0,15		0	0,76		0,42
PAPUA NEW GUINEA	PNG	0,75	0,42	0,43	0,3	0,37	0,48
POLAND	POL	0,26	0,87	0	0,67	0,35	0,24
PORTUGAL	PRT	0,22	1	0	0,79	0,52	0,15
PARAGUAY	PRY	0,4	0,65	0,45	0,44	0,09	0,66
QATAR	QAT	0,19	0	0,86	0,95	0,96	0,78
ROMANIA	ROU	0,6	0,77	0,29	0,46	0,69	0,92
RUSSIA	RUS	0,45	0,47	0,79	0,49	0,42	0,92
RWANDA	RWA	1	0,2	0,92	0,05	0,24	0,64
SAUDI ARABIA	SAU	0,65	0	1	0,77	0,59	0,5
SUDAN	SDN	0,88	0,17	1	0,17	0,71	0,94
SENEGAL	SEN	0,81	0,64	0,35	0,23	0,61	0,16
SINGAPORE	SGP	0,68	0,25	0,63	0,89	0,78	0,02
SOLOMON ISLANDS	SLB	0,05	0,54	0,55	0,38	0	0,54
SIERRA LEONE	SLE	0,93	0,49	0,49	0,02	0,07	0,9
EL SALVADOR	SLV	0,49	0,61	0,26	0,54	0,07	0,22
SERBIA	SRB	0,15	0,7	0,36	0,33	0,48	0,97
SAO TOME & PRINCIPE	STP	0,68		0,23	0,26	0,99	0,86
SLOVENIA	SVN	0,27	1	0	0,77	0,75	0,31

SLOVAKIA	SVN	0,32	0,86	0	0,71	0,79	0,23
SWEDEN	SWE	0,01	1	0	0,94	0,53	0,06
SWAZILAND	SWZ	0,28	0,02	0,95	0,42	0,05	0,64
SEYCHELLES	SYC	0,03		0,41	0,75	0,88	0,77
SYRIA	SYR	0,46	0,04	1	0,39	0,3	0,55
CHAD	TCD	0,91	0,25	0,94	0,04	0,91	0,51
TOGO	TGO	0,55	0,2	0,72	0,11	0,1	0,3
THAILAND	THA	0,61	0,52	0,55	0,51	0,78	0,21
TAJIKISTAN	TJK	0,72	0,21	0,86	0,01	0,11	0,95
TIMOR LESTE	TLS	0,96	0,58	0,48	0,21	0,95	0,38
TONGA	TON	0,2		0,62	0,5	0,69	0,46
TRINIDAD & TOBAGO	TTO	0,54	1	0,35	0,72	0,31	0,47
TUNISIA	TUN	0,57	0,27	0,76	0,54	0,63	0,34
TURKEY	TUR	0,75	0,62	0,44	0,66	0,26	0,95
TANZANIA	TZA	0,94	0,31	0,55	0,13	0,71	0,8
UGANDA	UGA	0,9	0,24	0,72	0,09	0,58	0,73
UKRAINE	UKR	0,53	0,56	0,53	0,28	0,39	0,89
URUGUAY	URY	0,3	1	0	0,74	0,2	0,6
UNITED STATES	USA	0,05	1	0	0,97	0,36	0,12
VENEZUELA	VEN	0,69	0,38	0,58	0,68	0,61	0,99
VIETNAM	VNM	0,7	0,07	1	0,21	0,93	0,77
YEMEN	YEM	0,79	0,3	0,75	0,25	0,22	0,84
SOUTH AFRICA	ZAF	0,18	0,82	0,21	0,58	0,23	0,58
ZAMBIA	ZMB	0,95	0,5	0,53	0,16	0,88	0,9
ZIMBABWE	ZWE	0,74	0,27	0,93	0,25	0,01	0,66

countryname	open	govsize	yrsch	life	popn	gini
AFGHANISTAN	0,5	0,28	0,06	0,17	0,92	0,06
ANGOLA	0,82	0,89		0,03	0,95	0,85
ALBANIA	0,45	0,14	0,73	0,75	0,03	0,14
UNITED ARAB EMIRATES	0,87	0,04	0,57	0,76	0,99	
ARGENTINA	0,03	0,34	0,58	0,73	0,34	0,81
ARMENIA	0,37	0,26	0,86	0,6	0,06	0,23
AUSTRALIA	0,08	0,62	0,94	0,96	0,52	0,33
AUSTRIA	0,66	0,78	0,64	0,92	0,19	0,11
AZERBAIJAN	0,58	0,15		0,37	0,43	0
BURUNDI	0,07	0,91	0,04	0,09	0,94	0,27
BELGIUM	0,92	0,92	0,85	0,86	0,28	0,26
BENIN	0,14	0,3	0,08	0,19	0,92	0,59
BANGLADESH	0,08	0,01	0,21	0,35	0,48	0,25
BULGARIA	0,73	0,61	0,7	0,62	0,02	0,22
BAHRAIN	0,86	0,47	0,49	0,76	0,99	
BAHAMAS	0,64	0,37		0,65	0,64	

BELIZE	0,79	0,48	0,83	0,54	0,79	
BOLIVIA	0,32	0,49	0,56	0,31	0,63	0,94
BRAZIL	0,01	0,84	0,39	0,5	0,4	0,94
BARBADOS	0,62	0,59	0,6	0,69	0,2	
BRUNEI	0,72	0,88	0,55	0,8	0,65	
BOTSWANA	0,64	0,84	0,61	0,12	0,43	0,98
CENTRAL AFRICAN REPUBLIC	0,05	0,16	0,09	0,01	0,66	0,84
CANADA	0,34	0,85	0,92	0,97	0,37	0,3
SWITZERLAND	0,75	0,2	0,79	0,99	0,32	0,24
CHILE	0,35	0,25	0,66	0,84	0,38	0,9
CHINA	0,23	0,43	0,44	0,65	0,23	0,6
CÔTE D IVOIRE	0,56	0,06	0,16	0,05	0,63	0,65
CAMEROON	0,1	0,2	0,26	0,13	0,8	0,62
CONGO, DEM. R.	0,27	0,07	0,1	0,04	0,86	0,73
CONGO	0,89	0,4	0,3	0,14	0,83	0,7
COLOMBIA	0,06	0,57	0,43	0,58	0,55	0,95
COSTA RICA	0,58	0,51	0,51	0,86	0,6	0,83
CAPE VERDE	0,66	0,64		0,46	0,36	0,76
CUBA	0,04	0,99	0,63	0,83	0,12	
CYPRUS	0,69	0,67	0,81	0,9	0,55	
CZECH REP.	0,78	0,82	1	0,78	0,12	0,02
GERMANY	0,44	0,72	0,82	0,89	0,08	0,17
DOMINICA	0,55	0,57			0,14	
DENMARK	0,63	0,97	0,89	0,82	0,17	0,01
DOMINICAN REP.	0,31	0,09	0,44	0,55	0,51	0,83
ALGERIA	0,32	0,51	0,29	0,44	0,57	
ECUADOR	0,25	0,28	0,47	0,72	0,62	0,87
EGYPT	0,17	0,29	0,34	0,43	0,58	0,2
SPAIN	0,21	0,68	0,64	0,95	0,41	0,33
ESTONIA	0,9	0,68	0,98	0,51	0,05	0,28
ETHIOPIA	0,1	0,44		0,14	0,84	0,19
FINLAND	0,47	0,9	0,67	0,85	0,15	0,07
FIJI	0,83	0,58	0,78	0,4	0,26	0,74
FRANCE	0,19	0,93	0,77	0,95	0,26	0,18
GABON	0,6	0,13	0,46	0,25	0,74	0,63
UNITED KINGDOM	0,25	0,83	0,8	0,87	0,27	0,49
GHANA	0,57	0,36	0,38	0,2	0,77	0,67
GAMBIA	0,31	0,1	0,04	0,18	0,94	0,77
EQUATORIAL GUINEA	0,99	0,01		0,08	0,9	
GREECE	0,2	0,79	0,62	0,88	0,11	0,34
GUATEMALA	0,29	0,12	0,17	0,41	0,77	0,91
GUYANA	0,98	0,8	0,54	0,33	0,22	
HONDURAS	0,82	0,55	0,28	0,52	0,7	0,96
CROATIA	0,51	0,78	0,76	0,68	0,05	0,17
HAITI	0,27	0,07	0,2	0,21	0,53	0,97

HUNGARY	0,92	0,88	0,94	0,59	0,06	0,09
INDONESIA	0,23	0,08	0,25	0,39	0,5	0,35
INDIA	0,09	0,24	0,24	0,29	0,52	0,29
IRELAND	0,95	0,6	0,89	0,81	0,54	0,25
IRAN	0,16	0,36	0,48	0,47	0,46	0,52
IRAQ	0,68	0,65	0,33	0,56	0,82	0,1
ICELAND	0,52	0,95	0,76	0,98	0,41	0,06
ISRAEL	0,44	0,94	0,96	0,94	0,7	0,6
ITALY	0,16	0,77	0,59	0,99	0,17	0,44
JAMAICA	0,59	0,5	0,68	0,52	0,16	0,93
JORDAN	0,84	0,89	0,56	0,63	0,72	0,38
JAPAN	0,02	0,73	0,91	1	0,1	0,21
KAZAKHSTAN	0,56	0,23	0,87	0,37	0,35	0,13
KENYA	0,22	0,53	0,31	0,16	0,83	0,79
KYRGYZSTAN	0,76	0,66	0,72	0,42	0,44	0,31
CAMBODIA	0,84	0,02	0,13	0,27	0,59	0,4
KUWAIT	0,61	0,64	0,34	0,71	0,98	
LAO PDR	0,47	0,09	0,18	0,27	0,61	0,37
LIBERIA	0,75	0,24	0,12	0,15	0,95	0,51
LIBYA	0,54	0,45	0,42	0,63	0,5	
SRI LANKA	0,34	0,39	0,84	0,58	0,31	0,54
LESOTHO	0,96	0,99	0,36	0,06	0,32	0,9
LITHUANIA	0,77	0,8	0,74	0,64	0	0,32
LUXEMBOURG	0,99	0,56	0,75	0,88	0,59	
LATVIA	0,71	0,74	0,71	0,5	0,01	0,4
MOROCCO	0,42	0,69	0,15	0,42	0,39	0,57
MOLDOVA	0,85	0,72	0,69	0,39	0,08	0,36
MADAGASCAR	0,38	0,11		0,23	0,9	0,64
MALDIVES	0,94	0,66	0,19	0,45	0,65	0,48
MEXICO	0,24	0,22	0,5	0,75	0,47	0,8
MALI	0,3	0,26	0,01	0,1	0,93	0,47
MALTA	0,95	0,82	0,79	0,92	0,25	
MYANMAR	0		0,14	0,28	0,3	
MONGOLIA	0,8	0,41	0,53	0,31	0,46	0,37
MOZAMBIQUE	0,39	0,43	0	0,07	0,81	0,75
MAURITANIA	0,71	0,87	0,14	0,25	0,87	0,56
MAURITIUS	0,79	0,41	0,41	0,62	0,21	0,42
MALAWI	0,43	0,59	0,11	0,03	0,88	0,67
MALAYSIA	0,97	0,32	0,66	0,69	0,68	0,69
NAMIBIA	0,69	0,93	0,31	0,18	0,57	0,98
NIGER	0,18	0,46	0,01	0,12	0,97	0,46
NICARAGUA	0,49	0,05	0,26	0,48	0,49	0,68
NETHERLANDS	0,86	0,95	0,9	0,91	0,19	0,12
NORWAY	0,4	0,86	0,93	0,93	0,34	0,05
NEPAL	0,12	0,11	0,07	0,29	0,54	0,52

NEW ZEALAND	0,28	0,7	0,99	0,93	0,39	
PAKISTAN	0,03	0,13	0,16	0,34	0,68	0,15
PANAMA	0,91	0,34	0,59	0,78	0,66	0,92
PERU	0,12	0,22	0,61	0,54	0,45	0,82
PHILIPPINES	0,55	0,14	0,52	0,38	0,67	0,71
NORTH KOREA				0,35	0,28	
PALAU	0,77			0,53	0,29	
PAPUA NEW GUINEA	0,81	0,54	0,11	0,24	0,74	
POLAND	0,46	0,7	0,84	0,74	0,09	0,29
PORTUGAL	0,33	0,81	0,49	0,8	0,13	
PARAGUAY	0,68	0,16	0,37	0,49	0,69	0,89
QATAR	0,6	0,47	0,4	0,84	1	
ROMANIA	0,48	0,05	0,81	0,59	0,01	0,1
RUSSIA	0,21	0,63	0,91	0,36	0,07	0,53
RWANDA	0,06	0,45	0,09	0,07	0,89	0,87
SAUDI ARABIA	0,49	0,91	0,46	0,67	0,85	
SUDAN	0,05	0,27	0,06	0,22	0,75	0,39
SENEGAL	0,36	0,42	0,02	0,22	0,85	0,56
SINGAPORE	1	0,18	0,69	0,9	0,72	
SOLOMON ISLANDS	0,65	0,97		0,3	0,75	
SIERRA LEONE	0,19	0,21	0,05	0	0,91	0,48
EL SALVADOR	0,38	0,18	0,39	0,46	0,21	0,78
SERBIA	0,42	0,86	0,65	0,61	0,04	0,16
SAO TOME & PRINCIPE	0,36	0,76		0,32	0,76	0,66
SLOVENIA	0,81	0,75	0,96	0,79	0,15	0,02
SLOVAKIA	0,93	0,71	0,95	0,7	0,1	0,04
SWEDEN	0,53	0,96	0,97	0,97	0,24	0,03
SWAZILAND	0,94	0,55	0,21	0,1	0,45	0,88
SEYCHELLES	0,97	0,98			0,3	1
SYRIA	0,41	0,38	0,22	0,71	0,78	0,41
CHAD	0,51	0,03		0,05	0,97	0,63
TOGO	0,62	0,17	0,24	0,16	0,81	0,71
THAILAND	0,9	0,31	0,29	0,57	0,25	0,61
TAJIKISTAN	0,74	0,19	0,88	0,33	0,71	0,21
TIMOR LESTE	0,88	1		0,24	0,73	0,13
TONGA	0,4	0,63	0,71	0,56	0,23	
TRINIDAD & TOBAGO	0,7	0,3	0,74	0,44	0,18	
TUNISIA	0,67	0,61	0,32	0,67	0,37	0,5
TURKEY	0,15	0,38	0,35	0,48	0,48	0,55
TANZANIA	0,13	0,52	0,23	0,11	0,88	0,44
UGANDA	0,11	0,35	0,19	0,08	0,96	0,72
UKRAINE	0,73	0,74	0,86	0,41	0,03	0,08
URUGUAY	0,18	0,33	0,54	0,77	0,14	0,75
UNITED STATES	0,01	0,53	0,99	0,82	0,33	0,58
VENEZUELA	0,14	0,32	0,41	0,66	0,61	0,79

VIETNAM	0,88	0,03	0,27	0,73	0,42	0,45
YEMEN	0,45	0,39	0,03	0,26	0,79	0,43
SOUTH AFRICA	0,26	0,76	0,51	0,2	0,56	0,99
ZAMBIA	0,29	0	0,36	0,01	0,86	0,86
ZIMBABWE	0,53	0,49	0,45	0,02	0,35	

countryname	urb	ethno	rol	stab
AFGHANISTAN	0,11	0,89	0	0,08
ANGOLA	0,26	0,91	0,05	0,77
ALBANIA	0,39	0,27	0,31	
UNITED ARAB EMIRATES	0,86	0,71	0,72	0,61
ARGENTINA	0,95	0,32	0,34	
ARMENIA	0,58	0,15	0,49	0,86
AUSTRALIA	0,93	0,08	0,94	0,23
AUSTRIA	0,62	0,11	0,97	0,91
AZERBAIJAN	0,43	0,25	0,25	0,37
BURUNDI	0,01	0,34	0,09	0,3
BELGIUM	0,98	0,65	0,88	0,63
BENIN	0,3	0,92	0,4	0,82
BANGLADESH	0,14	0,03	0,22	0,5
BULGARIA	0,72	0,44	0,57	0,04
BAHRAIN	0,94	0,55	0,71	0,88
BAHAMAS	0,85	0,49	0,83	0,1
BELIZE	0,34	0,81	0,52	0,79
BOLIVIA	0,6	0,87	0,25	0,87
BRAZIL	0,87	0,61	0,51	0,55
BARBADOS	0,19	0,17	0,86	0,84
BRUNEI	0,75	0,61	0,74	0,45
BOTSWANA	0,48	0,45	0,75	0,97
CENTRAL AFRICAN REPUBLIC	0,28	0,95	0,04	0,61
CANADA	0,83	0,83	0,93	0,94
SWITZERLAND	0,73	0,59	0,96	0,72
CHILE	0,92	0,22	0,86	0,04
CHINA	0,32	0,18	0,48	0,34
COTE D IVOIRE	0,37	0,94	0,07	0,55
CAMEROON	0,39	0,97	0,12	0,74
CONGO, DEM. R.	0,27	0,98	0,02	
CONGO	0,56	0,98	0,1	0,69
COLOMBIA	0,75	0,68	0,41	0,01
COSTA RICA	0,65	0,28	0,7	0,67
CAPE VERDE	0,52	0,47	0,68	0,06
CUBA	0,77	0,67	0,27	0,83
CYPRUS	0,67	0,09	0,84	0,93
CZECH REP.	0,72	0,36	0,8	0,43
GERMANY	0,74	0,19	0,91	0,58

DOMINICA	0,63	0,24	0,77	0,26
DENMARK	0,9	0,07	0,99	0,85
DOMINICAN REP.	0,71	0,49	0,33	0,2
ALGERIA	0,61	0,38	0,3	0,98
ECUADOR	0,57	0,74	0,17	0,48
EGYPT	0,32	0,21	0,55	0,42
SPAIN	0,8	0,47	0,85	
ESTONIA	0,69	0,55	0,83	0,53
ETHIOPIA	0,04	0,85	0,28	1
FINLAND	0,86	0,16	1	0,56
FIJI	0,41	0,63	0,43	0,65
FRANCE	0,79	0,1	0,88	0,57
GABON	0,88	0,89	0,45	0,19
UNITED KINGDOM	0,83	0,15	0,92	0,75
GHANA	0,38	0,77	0,59	
GAMBIA	0,44	0,91	0,5	0,81
EQUATORIAL GUINEA	0,28	0,39	0,08	0,71
GREECE	0,76	0,19	0,77	0,66
GUATEMALA	0,37	0,57	0,14	0,25
GUYANA	0,15	0,7	0,39	0,34
HONDURAS	0,4	0,23	0,19	0,73
CROATIA	0,5	0,41	0,63	0,64
HAITI	0,35	0,09	0,03	0,85
HUNGARY	0,64	0,17	0,79	0,16
INDONESIA	0,36	0,85	0,32	0,01
INDIA	0,16	0,48	0,61	0,15
IRELAND	0,55	0,14	0,92	0,66
IRAN	0,68	0,77	0,26	0,91
IRAQ	0,7	0,41	0,01	0,09
ICELAND	0,96	0,06	0,95	0,15
ISRAEL	0,95	0,39	0,81	0,39
ITALY	0,66	0,13	0,69	0,89
JAMAICA	0,43	0,45	0,47	
JORDAN	0,85	0,67	0,67	0,12
JAPAN	0,91	0	0,87	0,39
KAZAKHSTAN	0,46	0,69	0,24	
KENYA	0,09	0,95	0,21	0,45
KYRGYZSTAN	0,22	0,79	0,13	0,64
CAMBODIA	0,06	0,26	0,14	0,88
KUWAIT	0,99	0,75	0,73	0,38
LAO PDR	0,15	0,58	0,18	0,11
LIBERIA	0,35	0,99	0,08	0,99
LIBYA	0,79	0,93	0,19	0,69
SRI LANKA	0,05	0,46	0,62	0,76
LESOTHO	0,1	0,32	0,54	0,46

LITHUANIA	0,63	0,37	0,75	0,78
LUXEMBOURG	0,92	0,59	0,95	0,28
LATVIA	0,65	0,65	0,76	0,51
MOROCCO	0,49	0,52	0,56	0,13
MOLDOVA	0,33	0,64	0,46	0,72
MADAGASCAR	0,18	0,99	0,41	0,52
MALDIVES	0,23		0,57	0,99
MEXICO	0,78	0,62	0,42	0,36
MALI	0,21	0,79	0,5	
MALTA	0,97	0,02	0,89	0,8
MYANMAR	0,17	0,56	0,03	
MONGOLIA	0,59	0,4	0,52	0,35
MOZAMBIQUE	0,19	0,8	0,37	0,7
MAURITANIA	0,45	0,69	0,3	0,28
MAURITIUS	0,3	0,51	0,81	
MALAWI	0,03	0,78	0,53	0,59
MALAYSIA	0,66	0,66	0,7	0,42
NAMIBIA	0,26	0,71	0,66	0,07
NIGER	0,05	0,73	0,32	
NICARAGUA	0,5	0,53	0,28	0,03
NETHERLANDS	0,88	0,11	0,94	
NORWAY	0,81	0,05	0,99	0,02
NEPAL	0,03	0,76	0,29	
NEW ZEALAND	0,9	0,43	0,97	0,32
PAKISTAN	0,23	0,82	0,23	0,41
PANAMA	0,59	0,63	0,55	0,2
PERU	0,77	0,75	0,35	0,68
PHILIPPINES	0,34	0,29	0,43	0,8
NORTH KOREA	0,54	0,01	0,12	
PALAU	0,81	0,5	0,79	0,26
PAPUA NEW GUINEA	0,01	0,33	0,17	0,17
POLAND	0,55	0,13	0,74	0,62
PORTUGAL	0,52	0,03	0,85	0,93
PARAGUAY	0,51	0,2	0,16	0,07
QATAR	0,99	0,87	0,78	0,54
ROMANIA	0,45	0,35	0,58	0,23
RUSSIA	0,74	0,3	0,21	0,9
RWANDA	0,07	0,37	0,38	
SAUDI ARABIA	0,84	0,21	0,65	0,27
SUDAN	0,2	0,84	0,06	0,36
SENEGAL	0,31	0,81	0,54	0,77
SINGAPORE	1	0,42	0,9	0,92
SOLOMON ISLANDS	0,06	0,12	0,23	0,47
SIERRA LEONE	0,25	0,93	0,15	0,82
EL SALVADOR	0,57	0,23	0,34	0,21

SERBIA	0,47		0,36	0,33
SAO TOME & PRINCIPE	0,53		0,39	0,4
SLOVENIA	0,41	0,27	0,82	0
SLOVAKIA	0,48	0,31	0,68	0,53
SWEDEN	0,89	0,05	0,98	0,24
SWAZILAND	0,08	0,04	0,37	0,96
SEYCHELLES	0,42	0,25	0,65	0,95
SYRIA	0,46	0,6	0,35	0,09
CHAD	0,08	0,96	0,06	0,29
TOGO	0,24	0,83	0,2	0,44
THAILAND	0,29	0,72	0,6	0,31
TAJIKISTAN	0,12	0,57	0,11	0,18
TIMOR LESTE	0,13		0,15	
TONGA	0,1	0,07	0,66	0,49
TRINIDAD & TOBAGO	0	0,73	0,59	0,18
TUNISIA	0,61	0,01	0,61	0,5
TURKEY	0,7	0,35	0,63	
TANZANIA	0,12	0,86	0,48	0,31
UGANDA	0,02	1	0,45	0,74
UKRAINE	0,68	0,51	0,26	0,58
URUGUAY	0,97	0,31	0,72	0,96
UNITED STATES	0,82	0,53	0,9	0,14
VENEZUELA	0,94	0,54	0,05	
VIETNAM	0,14	0,29	0,46	0,05
YEMEN	0,17		0,1	0,12
SOUTH AFRICA	0,54	0,88	0,64	0,47
ZAMBIA	0,25	0,9	0,44	0,6
ZIMBABWE	0,21	0,43	0,01	0,22

Four Baseline Membership Functions

Function	Formula	Domain
Linear	$\mu_{\text{lin}_i} = \begin{cases} 0 & \text{if } x_{\min} \leq x_i \leq \tau_e, \\ \frac{1}{2} \left(\frac{\tau_e - x_i}{\tau_e - \tau_c} \right) & \text{if } \tau_e < x_i \leq \tau_c, \\ 1 - \frac{1}{2} \left(\frac{\tau_i - x_i}{\tau_i - \tau_c} \right) & \text{if } \tau_c < x_i \leq \tau_i, \\ 1 & \text{if } \tau_i < x_i \leq x_{\max}. \end{cases}$	
Quadratic	$\mu_{\text{quad}_i} = \begin{cases} 0 & \text{if } x_{\min} \leq x_i \leq \tau_e, \\ \frac{1}{2} \left(\frac{\tau_e - x_i}{\tau_e - \tau_c} \right)^2 & \text{if } \tau_e < x_i \leq \tau_c, \\ 1 - \frac{1}{2} \left(\frac{\tau_i - x_i}{\tau_i - \tau_c} \right)^2 & \text{if } \tau_c < x_i \leq \tau_i, \\ 1 & \text{if } \tau_i < x_i \leq x_{\max}. \end{cases}$	
Root	$\mu_{\text{root}_i} = \begin{cases} 0 & \text{if } x_{\min} \leq x_i \leq \tau_e, \\ \frac{1}{2} \left(\frac{\tau_e - x_i}{\tau_e - \tau_c} \right)^{\frac{1}{2}} & \text{if } \tau_e < x_i \leq \tau_c, \\ 1 - \frac{1}{2} \left(\frac{\tau_i - x_i}{\tau_i - \tau_c} \right)^{\frac{1}{2}} & \text{if } \tau_c < x_i \leq \tau_i, \\ 1 & \text{if } \tau_i < x_i \leq x_{\max}. \end{cases}$	
Logistic	$\mu_{\text{log}_i} = \begin{cases} \left(1 + e^{-[(x_i - \tau_c) \left(\frac{-\log(19)}{\tau_e - \tau_c} \right)]} \right)^{-1} & \text{if } x_i < \tau_c, \\ \left(1 + e^{-[(x_i - \tau_c) \left(\frac{\log(19)}{\tau_i - \tau_c} \right)]} \right)^{-1} & \text{if } x_i \geq \tau_c. \end{cases}$	

^a x_i ; x_{\min} ; x_{\max} : base variable value; minimum base variable value; maximum base variable value
 τ_e ; τ_c ; τ_i : anchor for exclusion cut-off α_0 ; anchor for crossover $\alpha_{0.5}$; anchor for inclusion cut-off α_1

Bibliography

- Acemoglu, Daron, et al. "Democracy does cause growth." [2014].
- Alesina, Alberto, and Roberto Perotti. "The political economy of growth: a critical survey of the recent literature." *The World Bank Economic Review* 8.3 [1994]: 351-371.
- Alesina, Alberto, and Roberto Perotti. "Income distribution, political instability, and investment." *European economic review* 40.6 [1996]: 1203-1228.
- Alvarez, Mike, et al. "Classifying political regimes." *Studies in Comparative International Development* 31.2 [1996]: 3-36.
- Bardhan, Pranab. "Corruption and development: a review of issues." *Journal of economic literature* [1997]: 1320-1346.
- Baum, Matthew A., and David A. Lake. "The political economy of growth: democracy and human capital." *American Journal of Political Science* 47.2 [2003]: 333-347.
- Beetham, David, ed. "Defining and measuring democracy." [1994].
- Beetham, David. "Democracy and human rights." [1999].
- Bhagwati, Jagdish N. "The new thinking on development." *Journal of Democracy* 6.4 [1995]: 50-64.
- Bhagwati, Jagdish N., and T. N. Srinivasan. "The welfare consequences of directly-unproductive profit-seeking [DUP] lobbying activities: Price versus quantity distortions." *Journal of International Economics* 13.1 [1982]: 33-44.
- Blüthgen, Nils, and Stefan Legewie. "Robustness of signal transduction pathways." *Cellular and molecular life sciences* 70.13 [2013]: 2259-2269.
- Boix, Carles, and Susan C. Stokes. "Endogenous democratization." *World politics* 55.04 [2003]: 517-549.
- Bollen, Kenneth A., and Burke D. Grandjean. "The dimension [s] of democracy: Further issues in the measurement and effects of political democracy." *American Sociological Review* [1981]: 651-659.
- Breen, Richard, and John H. Goldthorpe. "Explaining educational differentials towards a formal rational action theory." *Rationality and society* 9.3 [1997]: 275-305.
- Byrne, David, and Charles C. Ragin. "The Sage handbook of case-based methods." [2009].
- De Haan, Jakob, and Clemens LJ Siermann. "A sensitivity analysis of the impact of democracy on economic growth." *Empirical Economics* 20.2 [1995]: 197-215.
- Diamond, Larry Jay. "Is the third wave over?." *Journal of democracy* 7.3 [1996]: 20-37.
- Diamond, Larry. "Economic development and democracy reconsidered." *American behavioral scientist* 35.4-5 [1992]: 450-499.
- Djankov, Simeon, Caralee McLiesh, and Andrei Shleifer. "Private credit in 129 countries." *Journal of financial Economics* 84.2 [2007]: 299-329.
- Djankov, Simeon, et al. "Who are Russia's entrepreneurs?." *Journal of the European Economic Association* 3.2-3 [2005]: 587-597.
- Doucouliağos, Hristos, and Mehmet Ali Ulubaşođlu. "Democracy and economic

- growth: a meta-analysis." *American Journal of Political Science* 52.1 [2008]: 61-83.
- Feng, Yi. "Democracy, governance, and economic performance: Theory and evidence." [2005].
- Gastil, Raymond D. "The past, present and future of democracy." *Journal of International Affairs* 38.2 [1985]: 161-179.
- Grier, Kevin B., and Gordon Tullock. "An empirical analysis of cross-national economic growth, 1951-1980." *Journal of Monetary economics* 24.2 [1989]: 259-276.
- Gurr, Ted Robert, Keith Jagers, and Will H. Moore. "Polity II: Political structures and regime change, 1800-1986." [1990].
- Gurr, Ted Robert, Keith Jagers, and Will H. Moore. "The transformation of the Western state: The growth of democracy, autocracy, and state power since 1800." *Studies in comparative international development* 25.1 [1990]: 73-108.
- Gwartney, James D., Robert A. Lawson, and Randall G. Holcombe. "Economic freedom and the environment for economic growth." *Journal of Institutional and Theoretical Economics [JITE]/Zeitschrift für die gesamte Staatswissenschaft* [1999]: 643-663.
- Kaufmann, Bruno, and M. Dane Waters, eds. "Direct democracy in Europe: a comprehensive reference guide to the initiative and referendum process in Europe." [2004].
- Kellstedt, Paul M., and Guy D. Whitten. "Political Science Research." [2009].
- King, Robert G., and Ross Levine. "Finance and growth: Schumpeter might be right." *The quarterly journal of economics* [1993]: 717-737.
- Kormendi, Roger C., and Philip G. Meguire. "Macroeconomic determinants of growth: cross-country evidence." *Journal of Monetary economics* 16.2 [1985]: 141-163.
- Krueger, Anne O. "The political economy of the rent-seeking society." *The American economic review* [1974]: 291-303.
- Levine, Ross, and David Renelt. "A sensitivity analysis of cross-country growth regressions." *The American economic review* [1992]: 942-963.
- Limongi Neto, Fernando Papaterra, et al. "What makes democracies endure?." *Journal of democracy* 7.1 [1996]: 39-55.
- Lipset, Seymour Martin. "Some social requisites of democracy: Economic development and political legitimacy." *American political science review* 53.01 [1959]: 69-105.
- Macpherson, Crawford Brough. "The political theory of possessive individualism." [1962]: 212-14.
- O'Driscoll, Gerald P., Kim R. Holmes, and Melanie Kirkpatrick. "2000 Index of economic freedom." [2000].
- Pourgerami, Abbas. "The political economy of development: A cross-national causality test of development-democracy-growth hypothesis." *Public Choice* 58.2 [1988]: 123-141.
- Przeworski, Adam, and Fernando Limongi. "Modernization: Theories and facts." *World politics* 49.02 [1997]: 155-183.
- Przeworski, Adam, and Fernando Limongi. "Political regimes and economic growth." *The journal of economic perspectives* [1993]: 51-69.
- Przeworski, Adam, and James Raymond Vreeland. "The effect of IMF programs on economic growth." *Journal of development Economics* 62.2 [2000]: 385-421.
- Przeworski, Adam, et al. "Democracy and development." *Cambridge*

- Books*[1993].
- Przeworski, Adam. "Democracy and development: political institutions and well-being in the world, 1950-1990." [2000].
- Przeworski, Adam. "Democracy and the market: Political and economic reforms in Eastern Europe and Latin America." [1991]
- Quinn, Dennis P., and John T. Woolley. "Democracy and national economic performance: the preference for stability." *American journal of political science* [2001]: 634-657.
- Ragin, Charles C. "Fuzzy-set social science." [2000].
- Ragin, Charles C. "Redesigning social inquiry: Fuzzy sets and beyond." [2008]: 190-212.
- Ragin, Charles C., and Benoît Rihoux, eds. "Configurational Comparative Methods: Qualitative Comparative Analysis [QCA] and Related Techniques." [2009]: 87-122.
- Ragin, Charles C., et al. "Complexity, generality, and qualitative comparative analysis." *Field Methods* 15.4 [2003]: 323-340.
- Ragin, Charles C., Kriss A. Drass and Sean Davey. 2006. *Fuzzy-Set/Qualitative Comparative Analysis 2.0*. Tucson, Arizona: Department of Sociology, University of Arizona.
- Rihoux, Benoît, and Charles C. Ragin. "Configurational comparative methods: Qualitative comparative analysis [QCA] and related techniques." [2009].
- Rihoux, Benoît. "Bridging the gap between the qualitative and quantitative worlds? A retrospective and prospective view on qualitative comparative analysis." *Field Methods* 15.4 [2003]: 351-365.
- Rodrik, Dani. "Institutions for high-quality growth: what they are and how to acquire them." *Studies in Comparative International Development* 35.3 [2000]: 3-31
- Sah, Raaj Kumar. "Social osmosis and patterns of crime: A dynamic economic analysis." *Journal of political Economy* 99.6 [1991].
- Samuel, P. "Huntington [1968]." *Political order in changing societies* [1989]: 146.
- Schmitter, Philippe C., and Terry Lynn Karl. "What democracy is... and is not." *Journal of democracy* 2.3 [1991]: 75-88.
- Schneider, Carsten Q., and Claudius Wagemann. "Reducing complexity in Qualitative Comparative Analysis [QCA]: Remote and proximate factors and the consolidation of democracy." *European Journal of Political Research* 45.5 [2006]: 751-786.
- Schneider, Carsten Q., and Claudius Wagemann. "Set-theoretic methods for the social sciences: A guide to qualitative comparative analysis." [2012].
- Schneider, Carsten Q., and Claudius Wagemann. "Standards of good practice in qualitative comparative analysis [QCA] and fuzzy-sets." *Comparative Sociology* 9.3 [2010]: 397-418.
- Schumpeter, Joseph A. "The creative response in economic history." *The journal of economic history* 7.02 [1947]: 149-159.
- Scully, Gerald W. "The institutional framework and economic development." *The Journal of Political Economy* [1988]: 652-662.
- Sen, Amartya. "Commodities and capabilities." *OUP Catalogue* [1999].
- Sirowy, Larry, and Alex Inkeles. "The effects of democracy on economic growth and inequality: A review." *Studies in Comparative International Development* 25.1 [1990]: 126-157.
- Sturm, Jan-Egbert, and Jakob De Haan. "How robust is the relationship between economic freedom and economic growth?." *Applied Economics* 33.7

- [2001]: 839-844.
- The World Bank, World Development Indicators [2012]. Retrieved from <http://data.worldbank.org/indicator>
- Thiem, Alrik "Set-Relational Fit and the Formulation of Transformational Rules in fsQCA." COMPASSSS workingpaper No. 61 [2010]
- Thiem, Alrik, and Adrian Dusa. "QCA: A package for qualitative comparative analysis." *The R Journal* 5.1 [2013]: 87-97.
- Wittenbaum, Gwen M., Andrea B. Hollingshead, and Isabel C. Botero. "From cooperative to motivated information sharing in groups: Moving beyond the hidden profile paradigm." *Communication Monographs* 71.3 [2004]: 286-310.