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2022-03-04

Deposited version:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Veiga, J., Ferreira-Lopes, A., Carvalho, H., Sequeira, T. N. & Monteiro, H. (2022). Determinants of Africa's development: An exploratory study . *Journal of Developing Areas*. 56 (1), 267-317

Further information on publisher's website:

[10.1353/jda.2022.0002](https://doi.org/10.1353/jda.2022.0002)

Publisher's copyright statement:

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DETERMINANTS OF AFRICA'S DEVELOPMENT: AN EXPLORATORY STUDY

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ABSTRACT

The increasing sustainability and the causes of economic growth in African countries, provide a set of new research questions for development scholars around the World. The possible determinants of this phenomenon are usually considered to be of economic, social, and institutional natures. In this work is assessed which economic, social, and institutional determinants of economic development are important to the development of Africa countries, for the years 1996 and 2014. The similarities amongst countries and the evolution between the two years are also analyzed. A principal components analysis for categorical data to examine the inter-relationships between the indicators in 1996 and also in 2014. An agglomerative clustering algorithm was used through two different methods: ward's method and complete linkage method (also called *furthest* neighbor). The Hierarchical Cluster Analysis (HCA) was suited by a k-means algorithm, to obtain an optimal solution and a typology of countries was identified for each year. The main contribution of the work is to make a joint analysis of the three determinants of economic growth and development – economic, social, and institutional, in which the literature is extremely scarce. Results indicate a positive association amongst institutional, economic, and social determinants of development, which means that countries that exhibit a good performance in institutional indicators also have a good performance in economic and social indicators, and *vice-versa*, although results are not as clear for 2014 as they are for 1996. Additionally, a higher concentration of countries in the two clusters in which these three indicators are better in 2014 (31 countries in 1996 and 49 countries in 2014), seems to indicate a positive evolution for development of African countries from 1996 to 2014. Results show that policy makers should take an integrated view regarding development and economic growth policies and take in consideration both the economic, social, and institutional characteristics of each country. If an economic, social, or institutional policy is designed independently of the other two, this policy will probably fail in reaching its development or economic growth goal, since all these three factors are interconnected.

JEL Classifications: C00, E02, O11, O55

Keywords: determinants of development; Africa; institutional, social, and economic dimensions; Principal Components Analysis for Categorical Data; Cluster Analysis

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INTRODUCTION

In this work the study of the main economic, social, and institutional determinants of development for the African Continent is done. The assessment of which of these determinants matters the most for African countries and whether there are any similarities amongst them is done. A principal components analysis for categorical data and a cluster analysis is performed, applied to the years of 1996 and 2014, to assess the dynamics of development in the continent.

Since the mid-1990s, African economies have achieved impressive growth rates, notably in the period after the 2008 crisis, when many world economies were in recession or struggling to achieve very low growth rates. In sub-Saharan African countries, economic growth has fallen to 3.7% in 2015, compared with 4.6% registered in 2014. However, an average growth rate of 4.4% and 4.8% is expected in 2016 and 2017, respectively, despite the slowdown of major African economies (AfDB 2015). This increased growth of African economies is due to many factors, including as the increase in domestic demand, growth of foreign direct investment, and the positive behaviour of external demand. The increasing sustainability and the causes of these growth trends provides a set of new research questions for scholars around the World. The possible determinants of this new phenomenon are usually considered to be of economic, social, and institutional natures.

The paper is organized as follows. The next section presents a review of empirical and theoretical literature on the relationship between economic, social, and institutional factors and growth and development. Section 3 presents the data, sources, and discusses conceptual issues regarding the database and also the methodology. Section 4 discusses the results and Section 5 presents the conclusion and policy recommendations.

LITERATURE REVIEW

This section presents the theoretical and empirical evidence on the relationship between economic, social, and institutional factors and growth and development.

The Relationship Between Economic Determinants and Development

The following economic determinants and their impact on development of African countries are analyzed: trade openness, foreign direct investments (FDI), infrastructure development, and monetary and fiscal issues.

Trade Openness

After the Second World War, the world production of goods increased exponentially, interrupted only by two oil crises in the 1970s. During this period, the value of world trade is equivalent to more than 13 trillion USD, which is estimated to be 42% of the World's combined gross domestic product (Buckman 2005).

A vast number of studies have elaborated on the relationship between trade openness and economic growth. (Frankel and Romer 1999), (Irwin and Tervio 2002), and (Ulasan 2012) use empirical investigation to analyze how international trade affects the

living standards of populations through income. They report strong evidence of positive effects of international trade on income and growth.

Solid evidence about the positive trade-growth nexus is provided by (Sachs and Warner 1995), demonstrating empirically that open developing economies grow 4.49% *per* year, which is two p.p. more than open developed economies.

(Olaifa, Subair & Biala 2013) use OLS regression techniques to study the impact of trade liberalization on economic growth in Nigeria between 1970 and 2012 and reach a conclusion that, in the long run, trade liberalization supports economic growth. However, they also found evidence that exports are negatively correlated to growth.

The importance of trade liberalization in 28 sub-Saharan African countries from 1981 to 2010 is investigated by (eds. Ncube, Faye & Verdier-Chouchane 2015), who, similarly to (Santos-Paulino and Thirlwall 2004), concludes that exports growth is positively correlated with trade liberalization but also that imports grow faster than exports by 2 p.p. with a very negative impact on the trade balance. An analysis of the impact of trade policy on economic growth in sub-Saharan African countries is provided by (Asfaw 2015) using a panel data of 47 countries covering the period from 2000 to 2008. This author's general conclusion is that trade policy positively correlates with economic growth. The greater is the level of economic openness, the greater is the impact on the economic growth.

Foreign Direct Investment

African countries have an urgent need to reduce the gap, at all levels, between their own and developed economies, and have focused actively in the last few decades on creating incentives to attract foreign direct investment. Numerous studies have addressed the impact of FDI on the economies of developing countries, but evidence is not conclusive.

(Lumbila 2005), (Sylwester 2005), and (Ndikumana and Verick 2008) agree that the impact of FDI on the economy of developing countries is significantly positive, but a different opinion is shared by (Fry 1993), (Dutt 1997), and (Hermes and Lensink 2003).

(Adams 2009) suggests that the FDI impact on economic growth is not linear and that it depends on factors such as human capital development, trade openness, and institutional performance, without which the FDI spillovers cannot be experienced, as explained by (Borensztein, Gregorio & Lee 1998), (eds. Moran, Graham & Blomström 2005), and (Le Vu and Suruga 2005). Nevertheless, Adams agrees on the importance of FDI, although highlighting that it is not sufficient for economic growth. (Farole and Winkler 2014) go further and identify the following determinants of spillovers from FDI: (1) quality investment climate, (2) stable political and social conditions, (3) favorable business environment, and good access to land and infrastructure, and (4) trade openness and the absorptive capacity of the host country.

In general, the growth impact of FDI is not very pronounced, as shown in a recent analysis of 38 sub-Saharan African countries made by (Calderón and Nguyen 2015). A different view is defended by (Anyanwu and Yameogo 2015), who identify a U-shaped relationship between economic development and FDI inflows to West Africa. In an empirical investigation in 14 Eastern African countries covering the period between 1980 and 2013, (Seiko 2016) confirms the positive correlation, but only marginally significant effect, of foreign direct investment on economic growth.

Infrastructure Development

In an extensive literature review on the impact of infrastructure development on growth and poverty reduction in sub-Saharan Africa, (Ndulu 2006) stresses the importance of infrastructure to growth and the essential role of governments in providing public goods, supporting the provision of infrastructure, and addressing market failures.

Poor infrastructures are a serious constraint to growth of African countries. (Ashipala and Haimbodi 2003) investigated the relationship between public investment and economic growth in South Africa, Botswana, and Namibia, using the VECM methodology, and found a positive relationship. Investigating the relationship between transportation capital investment and economic growth in one of the major African economies, Nigeria, between 1977 and 2009, (Seetanah 2006) used OLS regression techniques and found evidence that, although positive, the impact of transportation on growth is not significant. (Calderón and Servén 2010) claim that under the right conditions infrastructure development can play a major role in promoting growth and equity and, through both channels, help to reduce poverty. They conclude that roads, power, and telecommunications infrastructure are the most important determinants of long-run growth in Africa. (Siyan, Eremionkhale & Makwe 2015) recommend an increment of public investment on road and railways infrastructures, seaports, and airway transportation as a condition to boost growth through productivity.

Monetary and Fiscal Issues

Economists and decision makers generally agree on the importance of monetary policy as one of the key drivers of economic growth and it represents today a priority to most governments (Nkoro 2005). In fact, economic growth is an essential condition for the reduction of poverty and improvement of living standards, which ultimately means development. (Precious and Palesa 2014) use different econometric techniques to study the relationship between monetary policy and economic growth in South Africa and recommend to the government the implementation of sound monetary policies capable of attracting investments, thereby promoting growth and development.

Fiscal policy is the means by which a government adjusts its level of expenditure, influencing the whole economy. It is therefore essential to understand the composition of public expenditure, which can be used as a key instrument for the promotion of equitable economic development. (Baldacci, Clements & Gupta 2003) developed the issue of public expenditure composition and brought a surround analysis of the effect of quality fiscal adjustments on the achievement of higher growth through the reduction of unproductive expenditures and protection of public investment. (Paternostro, Rajaram & Tiongson 2007) defend the need for an appropriate framework that should be designed exclusively to assess the impact of public spending on growth and on poverty. According to these authors, such a framework must incorporate the theoretical and empirical guidance to public spending policy.

The Relationship between Institutional Determinants and Development

For decades, economists and researchers have stressed the importance and role of the so-called traditional determinants such as physical and human capital accumulation, total factor productivity, technological innovation, the process of knowledge creation and diffusion, and international economic integration on economic growth (Helpman 2004). However, today a growing number of studies have been conducted on the importance of institutional factors such as the role of political freedom, political stability, and voice and accountability on economic growth and development. Experts have increasingly recognized that politics and institutions are key to the process of economic growth by affecting the incentives to accumulate, innovate, and accommodate change (Avellaneda 2010).

Regarding institutional factors, the debate on the impact of governance and corruption on growth and development is very intensive. In the sections that follow, they are discussed.

The lack of good governance and strong institutions, and a high level of corruption have been pointed out as major constraints that hinder the effort of African economies to achieve a higher and sustainable growth. Numerous academics and policy makers agree that good governance matters for development. The quality of institutions, governance, and the business and investment climate are essential for growth and development (World Bank 1989).

The Worldwide Governance Indicators (WGI) produced by the World Bank, has used accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption to analyze the possible relationship between governance and growth. In fact, there is a broad consensus among growth economists that good governance is a *sine qua non* condition for achieving better living standards (Kaufmann, Kraay & Zoido-Lobaton 2000; Knack 2002). The impact of each one of WGI's variables on the economic development of nations has been studied by many scholars and researchers. In a broad term, the effect of good governance on economic growth is positive but there is still a growing debate whether good governance practices lead to economic growth or whether economic growth leads to good governance (Acemoglu, Johnson & Robinson 2001), (Kaufmann, Kraay & Mastruzzi 2005, 2010 Arndt and Oman 2006). In a study of the World Bank (Kaufmann, Kraay & Zoido-Lobaton 2002) evaluate WGI's variables over the period 1996 to 2002 and find a positive relationship between *per capita* income and quality of governance. In contrast, (Emara and Jhonsa 2014) show that despite the low performance of most of Middle East and North African countries in almost all six measures of the WGI, their estimated levels of *per capita* income are relatively higher than the rest of the countries in the sample. (Emara and Chiu 2016) find that *per capita* GDP would rise by 2% if the CGI (Composite Governance Index), which summarizes the existing six governance measurements of the Worldwide Governance Indicators, increases by one unit. The authors also concluded that the effect of improvement of governance is not responsible for higher than expected *per capita* GDP in most of the oil rich Middle Eastern North African countries.

Many other authors have also found a positive relationship between good governance and economic development, including (Knack and Keefer 1995), (Mauro 1995), (Kaufmann, Kraay & Zoido-Lobaton 1999a, b), and (Campos and Nugent 1999). (Knack and Keefer 1995) find that the quality of institutions, operationalized as the security of property rights and the level of contract enforcement, is crucial to growth and

investment. (Fayissa and Nsiah 2013) use fixed and random effects and Arellano-Bond models to investigate the role of governance in explaining the sub-optimal economic growth performance of African economies and conclude that different levels of growth in African economies result largely from good governance or lack of it.

The concept of good governance incorporates good corporate, economic, and political governance, which in fact constitute the very basic dimensions of economic growth and development in Africa. (Mwangi and Mbaku 2011) consider that good governance, at the very least, entails: (1) transparency and accountability in both the public and private spheres; (2) maintenance of the rule of law; (3) provision of all market participants with incentive systems that enhance their involvement in productive activities; (4) protection of the person and property of individuals; (5) enforcement of property rights and freely negotiated contracts; and (6) the maintenance of an institutional environment conducive to mutually beneficial free exchange and peaceful coexistence.

The quality of institutions alone is also an important issue. (eds. Pleskovic and Stiglitz 1997) demonstrates that institutional quality, as measured by bureaucratic efficiency, absence of corruption, protection of property rights, and the rule of law, is important for growth. (eds. Aghion and Durlauf 2005) show, in their seminal study on institutions, that economic discrepancies between countries are consequences of the quality level of the institutions: “different colonization strategies have led to different types of institutions that remained until today”. Furthermore, the work of (eds. Aghion and Durlauf 2005) concludes that differences between countries in terms of income and economic development are explained by differences in institutions. (Alence 2004) analyses the impact of political institutions on governance quality in a sample of 38 sub-Saharan African countries and shows that democratic institutions systematically enhance African states’ performance as agents of development. (Acemoglu and Robinson 2010) found a correspondence between economic prosperity of the nations and political institutions. According to their paper, better institutions would positively contribute to poverty alleviation. The same line of thinking is followed by (Chauvet and Collier 2004), who defend that developing countries with poor quality of governance will lead to less economic growth.

The question of political stability and democracy is also a topic by itself. (Alesina and Perotti 1994) find a significant and robust negative effect of socio-political instability on investment in a panel of countries for the period 1970-85. They confirm the causality link from income distribution to socio-political instability and from the latter to investment. (Fosu, Bates & Hoeffler 2006) establish that there is no hesitation that elected governments can carry better economic performance, and that they are instead not likely to embrace economically essential policies that are unpopular. Such governments also tend to raise the peril of political chaos in Africa, which may in turn be growth inhibiting. According to these authors, recent efforts by African countries to implement governments that are more democratic may not lead to the anticipated improved growth and development outcomes unless attempts to minimize political disorder can succeed. (Chauvet and Collier 2004) and (Nurudeen, Karim & Iziz 2015) consider that it is crucial for all African countries to promote a stable political environment through sound institutional reforms, which ensure the respect for human rights, install a respect for the rule of law, promote political inclusion and tolerance of diversity, and continuously fight against corruption.

Another dimension and pre-requisite of good governance is the rule of law, which should be seen as a superstructure that represents the supremacy of law over the entire society. Additionally, the role of an effective regulatory regime in promoting economic growth and development has generated considerable interest amongst researchers and practitioners in recent years. Economic regulation arises from the existence of significant market failure and consequently from market imperfections. As stated by (Stiglitz 1998), market failures and externalities are more pronounced in developing countries, and this is why the need for public regulation should be much stronger. (Barro 1998) considers that some variables such as schooling and life expectancy, lower fertility rate, lower government consumption, better maintenance of the rule of law, lower inflation, and improvements in the terms of trade play a positive effect on economic growth. The author also emphasizes the weak effect of political freedom on economic growth as well as the small effect of democracy on growth.

Concerning the regulations, (Acemoglu, Johnson & Robinson 2001) and (Djankov *et al.* 2002) argue that a fundamental premise of business regulations is that economic activity requires good rules. As defended by (Morita and Zaelke 2007), simply making or drafting good laws is not the solution. Ensuring the implementation of these laws and rules is equally important. (Glaeser *et al.* 2004) use OLS growth regressions to investigate the relationship between institutions and growth and find consistent evidence that is in line with (Djankov *et al.* 2002), who state that the institutions are stronger determinants of growth, as the level of human and social capital rises in the community. Cross country regression studies conducted by (Djankov, McLiesch & Ramalho 2006) and (Haidar 2012) show that business regulatory procedures are negatively correlated with economic growth. Their studies assume a temporal dimension of one year, a reduced number of countries, and a small number of indicators. They reach the conclusion that economic growth is a function of the existing regulatory framework. (Adams and Opoku 2015) study the effect of foreign direct investment (FDI) on economic growth and analyze the impact of the regulatory regime on 22 sub-Saharan African countries. They use the Generalized Methods of Moments (GMM) estimation technique and a time series from 1980-2011, and find that neither FDI nor regulations (total regulations, credit market regulations, business regulations, and labor market regulations) have an independent significant effect. However, their interaction has a significant positive effect on economic growth.

Voice and accountability are also important dimensions of governance. Academics and policy makers generally agree that governance and accountability are preconditions for successful economic development. (Sen 1999) argues that “the process of expanding the real freedoms that people enjoy”, is what allows people to do the things that they value. This process is associated with voice and accountability, which he considers as “constitutive” elements of development. He defends that poverty is the deprivation of these elements. A similar opinion is shared by (Gloppen, Rakner & Tostensen 2003) to whom “poor people identify the lack of voice and accountability as central to their experience of poverty”. However, (Sen 1999) also argues and recognizes that freedoms, including those associated with voice and accountability, are closely related to human welfare and better governance. “Increased social opportunities such as education can lead to better economic opportunities and therefore higher incomes”. According to this

author, political freedoms enable citizens to articulate their needs and values through their participation in public debate.

Corruption in Africa has reached alarming proportions that affect both public and private dimensions. It is a broad spectrum pandemic over the whole continent and has profoundly negative socio-economic impacts. It results in the abuse and misuse of the already scarce resources, affecting the entire economy through multiplier effects (Gray and Kaufmann 1998).

Studies on the effects of corruption on economic growth report divergent results. (Leff 1964) and (Huntington 1968) were the first to advance the view that corruption can be efficiency enhancing because it removes government-imposed rigidities that impede investment and interfere with other economic decisions favorable to growth. Other authors view corruption as a factor that induces a more efficient provision of government services. More recently, (Acemoglu and Verdier 1998) establish that when public officials are required to uphold property rights and enforce contractual arrangements, the costs associated with ensuring that public officials are not corrupt can be too high for the prevention of all corruption to be optimal.

However, the adverse impact of corruption on the development process of African countries is recognized at the international level. It deeply affects the dynamic and efficiency of investments. (Mauro 1995) defends that corruption lowers private investments, thereby reducing growth. The author states "The negative association between corruption and investment, as well as growth, is significant, both in a statistical and in an economic sense." Corruption is detrimental to growth. These opinions are also shared by (Tanzi 2002), (Svensson 2005), and (Gyimah-Brempong 2002), defending that countries with higher levels of corruption tend to grow more slowly.

The impact of corruption on African countries is much stronger in public investments. According to (Lawal 2007), corruption raises the costs of doing business and wastes resources, thereby draining the revenues of the state. Corruption expands poverty and makes it difficult for ordinary people to get ahead through their own efforts. There is increasing evidence that the social and economic cost of corruption disproportionately affects the poor, who not only suffer from the lack of services and efficient government, but who are also powerless to resist the demands of corrupt officials. (Nageri, Gunu & Abdul 2013) investigated the impact of corruption on economic development of Nigeria using Ordinary Least Square (OLS) regression techniques and concluded that the Corruption Perception Index (CPI) as a proxy of Corruption has a negative impact on economic growth and development. They recommend the Nigerian government to follow the anti-corruption codes as stipulated in its legislation. This is the way to increase transparency, accountability, and the application of the rule of law, and is an adequate strategy to improve the CPI ranking, induce investment, and foster economic growth and development. (Nurudeen, Karim & Iziz 2015) investigate the causal relationship among corruption, political instability, and economic development in the Economic Community of West African States (ECOWAS) using the Granger causality test within a multivariate cointegration and error-correction framework for the 1996-2012 period. They conclude that in the short-term political instability Granger-causes economic development and in the long-term economic development Granger-causes corruption. They recommend to the ECOWAS governments to employ sound policies to promote political stability.

The Relationship between Social Determinants and Development

It is unquestionable that one of the main concerns of development is to understand the numerous issues inherent to the increase of the population. To do so, all governments should pursue economic growth at a rate that is greater than the growth rate of the population. In Africa the population is growing at a very rapid rate, 2.55% annually between 2010 and 2015, compared with the World's, 1.18% (United Nations 2015). This trend will certainly bring added social difficulties for the African continent, with an impact on the standards of living of the population.

Most studies report a positive relationship between economic growth and poverty reduction. Regarding sub-Saharan African countries, the evidence of positive correlation is strong (Moser and Ichida 2001). It is consensual that growth leads to poverty reduction and that income elasticity of poverty differs from country to country, as a one percent increase in income may lead to a greater or lesser percent reduction of poverty. It all depends on how the national wealth is distributed. An equitable income distribution contributes to the decline of poverty (Go *et al.* 2007). The achievements in terms of growth and poverty reduction of the last 15 to 20 years in sub-Saharan Africa have been very impressive and mark a major break from the past (Mckay and Thorbecke 2015).

A healthier population generates a number of positive outcomes, such as a more productive workforce, while also reducing the risk of poverty traps. Health is a productive asset and ill health is therefore responsible for reduced productivity, shortened working lives, and increased numbers of days lost to illness (WHO 2002). As stated by (Eggoh, Houeninvo & Sossou 2015), education and health expenditures have a negative impact on economic growth for a sample of African countries due to issues of inefficiency, corruption, bureaucracy, and underinvestment. Contrarily, (Gyimah-Brempong 1998) and (Behbudi, Mamipour & Karami 2010) show a positive correlation between economic growth and the share of government budget allocated to health care in African countries.

The relationship between inequality and economic growth and development has been much discussed. (Ravallion 1995) reports no systematic relationship between inequality and income growth, and (Deininger and Olinto 2000) find that inequality has an economically significant negative effect on growth. Focusing on agriculture, they defend that higher land inequality significantly lowers returns to education, thus slowing accumulation of human capital and impeding development. (Barro 2000) analyses the impact of inequality on economic growth in a panel of 146 countries and finds evidence of negative correlations in poor countries with *per capita* GDP below 2070 USD and positive for countries above that threshold. (Okojie and Shimeles 2006) analyze the subject of income and non-income inequalities in sub-Saharan Africa and determine that the efficiency in decreasing the level of poverty is lower in countries with high early income inequality. These countries need a combination of economic growth and reductions in inequality to make a substantial impact on poverty. For other countries, mainly those with the bottom *per capita* income, the impact of redistribution on poverty is lower relative to the influence of growth.

EMPIRICAL METHODOLOGY

Data

The database comprises a range of economic, social, and institutional variables for 54 African countries. Two datasets are built. The first is for the year 1996, designated as the older year and a second data set specific for the year 2014, designated as the more recent year. The case in which the years of data are different from the above will be indicated under the description of each variable. The choice of the first and second year is due to data availability. The database is detailed below, dividing it by economic, social, and institutional variables. More information about the variables is in Appendix A, Tables A1 to A3. Variables in the sub-sections below are ordered by the databases to which they belong.

Economic Variables

In this section, the economic variables used in the analysis are described.

- **Business freedom** - is a composite indicator of the efficiency of government in regulating business. The indicator includes measurements such as the ease of starting, operating, and closing a business. The business freedom score for each country is a number between 0 and 100.
- **Fiscal freedom** - is a composite measure of the burden of taxes that includes both marginal tax rates and the overall level of taxation (direct and indirect taxes), as a percentage of GDP. It varies between 0 and 100.
- **Investment freedom** - the Index assesses a variety of regulatory restrictions that are normally enforced on investment. It varies between 0 and 100.
- **Monetary freedom** - combines a measure of price stability with a valuation of price controls, which can distort market activity. It varies between 0 and 100.
- **Trade freedom** - is a composite measure of the extent to which tariff and non-tariff barriers affect international trade of goods and services. It varies between 0 and 100.
- **GDP growth rate** - percent annual change of Gross Domestic Product (GDP).
- **Government spending score** – composed of government expenditures, it includes consumption by the state and all transfer payments related to various entitlement programs.
- **Delta33** - percent annual change of the Gross National Product (GNP) *Per Capita*.
- **Economic effectiveness (“ecoeff”)** - data on real GDP *per capita*, which is coded into a five-point fragility scale.
- **Economic legitimacy (“ecoleg”)** - represents the share of export trade in industrial goods. When the percentage of industrial goods is low, the country is highly dependent on primary commodities for foreign trade. The manufacturing percentage of merchandise exports is converted into a four-point fragility score.

Institutional Variables

This section presents a description of the institutional variables used in the analysis.

- **Control of corruption** - reveals perceptions of the extent to which public power is used for private gain.

- **Government effectiveness** - echoes opinions of the quality of public and civil services and the degree of their independence from political pressures, as well as the quality of policy making and execution, and the credibility of the government's commitment to such policies.
- **Political stability and absence of violence/terrorism** - measures views of the probability of political uncertainty and/or politically motivated violence, including terrorism.
- **Regulatory quality** - reflects opinions of the capacity of the government to frame and implement sound policies and rules that allow and stimulate private sector development.
- **Rule of law** - reveals perceptions of the degree to which agents have trust in and stand by the rules of society, and specifically the quality of contract enforcement, property rights, the police, and the courts, as well as the probability of crime and violence.
- **Voice and accountability** - reflects perceptions of the extent to which a country's citizens are able to take part in selecting their government, as well as freedom of expression, freedom of association, and free media.
- **Freedom from corruption** – is mostly derived from the *Transparency International's Corruption Perceptions Index (CPI)*. It varies between 0 and 100.
 - **Property rights** - measures the extent to which a country's laws safeguard private property rights and the degree to which those laws are respected. It is scored between 0 and 100.
- **Legis07** - is an index of seats detained by the largest party.
- **Legis08** - is a measure of political polyarchy or pluralism.
- **Polit06** - Premier. Formal executive is premiership, including “Chairman, Council of Ministers”, Formal executive is non-premiership.
 - **Polit07** – type of effective executive, which refers to the individual who exercises the main influence in determining most major decisions affecting the nation's internal and external affairs. The score is between 1 and 5.
- **Polit08** – selection of effective executive. It is scored between 1 and 3.
- **Polit09** - degree of Parliamentary Responsibility refers to the extent to which a premier must be subject to the support of a majority in the lower house of a legislature to stay in office. It is scored between 1 and 4.
- **Polit10** - Size of Cabinet - refers to the number of ministers of “cabinet rank”.
- **Polit11** - Number of Major Cabinet Changes – refers to the number of times in a year that a new premier is named and/or 50% of the cabinet positions are assumed by new ministers.
- **Polit12** - Changes in Effective Executive – refers to the number of times in a year that actual control of executive power changes hands. Such a change entails that the new executive be independent of his predecessor.
- **Polit13** - Legislative Effectiveness. It is scored between 1 and 4.
- **Polit14** - Legislative Selection. It is scored between 1 and 3.
- **Polit15** - Number of legislative elections - refers to the number of elections held for the lower house of a national legislature in a given year.
- **S17F6/Domestic6** - any violent protest or clash of more than 100 citizens including the use of physical strength. The source is the Databanks International database.
- **Polity2** – is a composite indicator that ranges between -10 (strongly autocratic) and 10 (strongly democratic). The source is the POLITY IV Project from the Center for Systemic Peace.

- **Durable** - is the number of years since the latest regime change or the end of a transition period defined by the absence of stable political institutions. The source is the POLITY IV Project from the Center for Systemic Peace.
- **Security effectiveness (“seceff”)** - measure of general security and vulnerability to political violence. The final values are converted into a four-point fragility scale between 0 and 3.
- **Security legitimacy (“secleg”)** – is a measure of state repression. The final values are converted into a four-point fragility scale between 0 and 3.
- **Political effectiveness (“poleff”)** - measures the Regime Stability. The final values are converted into a four-point fragility scale between 0 and 3.
- **Political legitimacy (“polleg”)** - measures the Regime/Governance Inclusion. The final values are converted into a four-point fragility scale between 0 and 3.

Social Variables

The social variables used in the analysis are presented in this section.

- **Delta1** - percent annual change of the population.
- **Delta02** - represents the annual percentage change in population density (e.g., inhabitants/square mile).
- **Social effectiveness (“soceff”)** – is the Human Development Index (HDI) from the United National Development Report (UNDR), converted into a four-point fragility scale (between 0 and 3) based on the cut-off points of the lower three HDI quintiles in the baseline year, 2004.

Analytical Strategy

Firstly, a nonlinear factorial analysis – Principal Components Analysis for Categorical Data (CatPCA) – was used to examine the inter-relationships between the indicators in 1996 and also in 2014 (Gifi 1996; eds. Greenacre and Blasius 1994; Meulman 1992). The optimal-scaling approach implemented by CatPCA allows accommodating the nominal, the ordinal, and the quantitative input variables needed for the analysis. The use of CatPCA was also extremely important for the management of non-responses, since countries that did not have available information on certain indicators were excluded only from the optimal quantification of these indicators. As a result, 17 of the 53 countries that would otherwise be eliminated were preserved. As principal component analysis (PCA), CatPCA, using an optimal scaling procedure, defines a new system of orthogonal axes – dimensions (factors) – corresponding to the latent constructs that structure, in turn, the multidimensionality of the input. Each dimension is composed of all the active variables, which contribute with a different loading. Thus with the CatPCA algorithm new composite and standardized variables were defined, maximizing the association between the input variables and reducing, at the same time, the multidimensionality of the initial matrix.

The new quantitative variables (dimensions or factors) were then used to define a typology of countries performing a Hierarchical Cluster Analysis (HCA) (Hair *et al.* 2010). An agglomerative clustering algorithm was used through two different methods: ward’s method and complete linkage method (also called *furthest* neighbor). The HCA was suited

by a k-means algorithm in order to obtain an optimal solution and a typology of countries was identified for each year.

RESULTS

CatPCA finds three dimensions (see Figures B1 and C1 and Tables B1 and C1 in Appendix B and C for the two years), which allowed to define four clusters for both years (see Figures B2 and C2 in Appendix B and C for 1996 and 2014, respectively).¹ This typology describes four different types of countries according to the economic, institutional, and social variables that are in the database. We first present the results for the years 1996 and 2014 separately and then make a comparison between them.

Results for 1996

The analysis begins with the older year in the sample – 1996. Table 1 shows the distribution of the number of countries by the four clusters (types). There is one type (type 2) that has only one country – Mauritius (an island), while the type with more countries included is type 4, with more than 50% of African countries. Table B2 in Appendix B shows which countries are in each type.

TABLE 1. DISTRIBUTION OF THE COUNTRIES BY TYPES (CLUSTERS) AND OVERALL RANKING IN 1996

Typology	N	%	Ranking
type 1	7	13.2	Poorest Institutional/Economic performance/3 rd Social Performance
type 2	1	1.9	Best Institutional/Economic/Social performance
type 3	15	28.3	3 rd Institutional Performance/Poorest Economic and Social Performance
type 4	30	56.6	2 nd Institutional and Social Performance/3 rd Economic Performance
Total	53	100.0	

Tables B3 to B5 in Appendix B show results for institutional variables by type for 1996.² Type 2 (Mauritius) is the cluster in which these indicators exhibit the best performance (on average), followed by type 4, then type 3, and finally type 1. An analysis of mean and median of institutional indicators by type confirms higher values in type 2 than in the other three types (Table B3), followed by type 4 and 3. Type 1 registers, in fact, a smaller value for mean and median. Additionally, for the six indicators presented in Table B5, excluding “Property Right”, the results (100%) point to “No fragility”. In types 1, 3, and 4 the results are scattered across various levels of performance. Type 4 shows the second best performance, followed by 3 and 1. Particular attention should be addressed to the political legitimacy indicator (“polleg”) which, with the exception of type 2 (Mauritius), shows the highest proportion of “high fragility”, respectively 71.4%, 100%, and 69.0% for all the others types (1, 3, and 4). Security legitimacy (“secleg”) and political effectiveness (“poleff”) indicators show a strong weight of “medium/high fragility” for the three types. The same occurs with economic indicators, although only two indicators are

considered. The indicators economic effectiveness (“ecoeff”) presents a considerable weight of “high fragility” also for cluster 1 (85.7%), cluster 3 (53.8%), and cluster 4 (44.8%). The same propensity of “high fragility” is also seen for the economic legitimacy indicator (“ecoleg”) with 71.4% for cluster 1, 84.6% for cluster 3, and 55.2% for cluster 4 (Tables B6 to B8) and with the social effectiveness indicator “soceff”, which also denotes “high fragility” for cluster 1 (71.4%), cluster 3 (100%) and cluster 4 (69.0%) (Table B11).

Results indicate a positive association amongst institutional, economic, and social determinants of development.

Results for 2014

In this section the analysis of the results for the more recent year in the sample – 2014 is done, which also exhibits a 4 cluster solution. Table 2 shows the distribution of the number of countries by the 4 clusters (types), as well as their main features. There is one type (type 3) that has only one country – Libya, while the type with the most countries included is type 2, with more than 70% of African countries. Table C2 in Appendix C shows which countries are in each type.

TABLE 2. DISTRIBUTION OF THE COUNTRIES BY TYPES (CLUSTERS) AND OVERALL RANKING IN 2014

Typology	N	%	Ranking
type 1	3	5.7	3 rd Institutional performance
type 2	38	71.7	2 nd Institutional performance/Best Economic/Social performance
type 3	1	1.9	Poorest Institutional performance
type 4	11	20.8	Best Institutional performance
Total	53	100.0	

Tables C3 to C5 in Appendix B show results for institutional variables by type for 2014. Type 4 is the cluster in which these indicators show the best performance (on average), followed by type 2, then type 1, and finally type 3 (Libya). Among the institutional indicators, the political legitimacy (“polleg”) is the one that shows a substantial proportion of “no/low fragility” for cluster 4 (88.9%), cluster 2 (68.4%) and cluster 1 (66.6%). The security effectiveness indicator (“seceff”) shows a noteworthy proportion of “no fragility” for cluster 4 (100%) and cluster 2 (60.5%). Generally, this trend is repeated for the other indicators. The same occurs with economic indicators, which clearly express, in terms of means and medians, the best performance of type 4, followed by other clusters as above mentioned, as seen in Tables C6 and C7. Concerning the two economic indicators presented in Table C8 (“ecoeff” and “ecoleg”) and the social indicators presented in Table C11, the results obtained are not so clear in terms of the performance ranking of the different clusters, with cluster 2 tending to present the best performance.

Results indicate a positive association amongst institutional, economic, and social determinants of development.

Comparison between the Two Years

The concentration of countries in just one type is higher in 2014 (71.7%) than in 1996 (56.6%), as seen in Tables 1 and 2. In 1996 the analysis isolated the country (Mauritius) with the best performance, and in 2014 isolated the country with the poorest (Libya). In both years the cluster with the second best performance is the largest, which, due to the higher concentration of countries in the largest cluster in 2014, seems to indicate that economic, institutional, and social accomplishments are improving in more countries in Africa. Additionally, a higher concentration of countries in the two clusters in which these three indicators are better (31 countries in 1996 and 49 countries in 2014); seems to indicate a positive evolution for development of African countries from 1996 to 2014. Results indicate a positive association amongst institutional, economic, and social determinants of development, which means that policy makers should take an integrated view regarding development policies, although results are not as clear in 2014 as they are in 1996.

There is no clear geographical concentration in 1996, as seen in Figure 1, although type 4 gathers more countries from the south of the continent and types 1 and 3 more countries from the north and center of the continent. For 2014, in terms of geographical concentration, type 1 includes three countries that share borders in the north of the continent – Eritrea, Somalia, and Sudan and type 2, which is the largest type, is clearly geographically concentrated, as exhibited in Figure 2.

FIGURE 1. GEOGRAPHICAL POSITIONING OF TYPES IN 1996

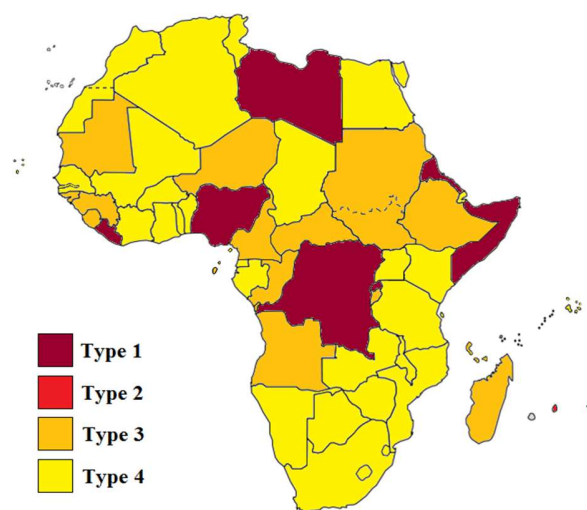
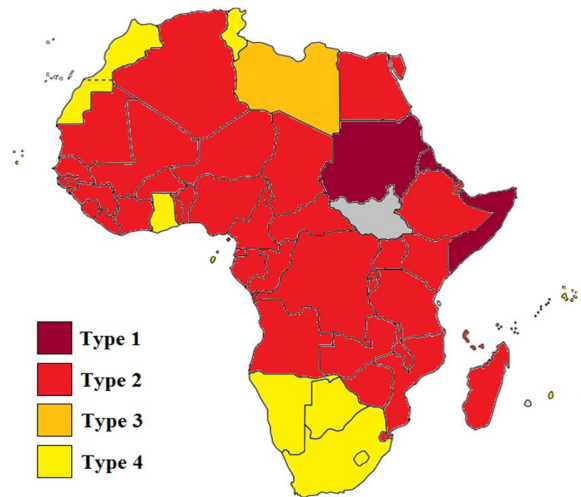


FIGURE 2. GEOGRAPHICAL POSITIONING OF TYPES IN 2014



Note: the grey area in the map represents South Sudan, which achieved its independence from Sudan in 2011, for which there is no data

Discussions

As we can see from the previous section, results for both years, and especially for 1996, confirm a positive association between institutional, economics, and social determinants of development, giving strength to our integrated approach of studying these three determinants together. Additionally, a higher concentration of countries in the two clusters in which the three indicators – economics, institutional, and social -, are better (31 countries in 1996 and 49 countries in 2014); seems to indicate a positive evolution for development of African countries from 1996 to 2014.

The clusters to achieve the above mentioned results were made based on the three dimensions found in the CatPCA, in tables B1 and C1 for 1996 and 2014, respectively. In these tables, we can see the most important variables that compose the dimensions, which are also found in the economic development literature on the African continent. The most important institutional variables in the two years are proxies of corruption, governance, institutions, and political stability. (Nageri, Gunu & Abdul 2013) find a negative relation between corruption and economic growth, (Chauvet and Collier 2004) and (Nurudeen, Karim & Iziz 2015) find a negative relation between political instability and economic growth. The quality of governance is found to be significant, and positive related with economic growth in the work of (Fayissa and Nsiah 2013). Institutions are found to be an important determinant of economic growth and development in the works of (Alence 2004), (Chauvet and Collier 2004), (eds. Aghion and Durlauf 2005), and (Acemoglu and Robinson 2010).

Regarding economic variables, the relevance of trade for economic growth in emerging economies is evident in the work of (Sachs and Warner 1995), (Olaifa, Subair &

Biala 2013), (eds. Ncube, Faye & Verdier-Chouchane 2015), and (Asfaw 2015). FDI (which investment freedom is a proxy in our data set) is also considered to be important in the literature, although with mixed results: a positive impact on economic growth and development for (Lumbila 2005), (Sylwester 2005), and (Ndikumana and Verick 2008), a negative impact for (Fry 1993), (Dutt 1997), and (Hermes and Lensink 2003), and a negligible impact for (Calderón and Nguyen 2015). The work of (Precious and Palesa 2014) finds a positive relation between a sound monetary policy and economic growth and development.

In terms of social determinants, the works of (Gyimah-Brempong 1998), (Behbudi, Mamipour & Karami 2010), and (Eggoh, Houeninvo & Sossou 2015), emphasize the relevance of health and education on economic growth and development, which is considered in our database in the social effectiveness (“soceff”) variable, which is a four-point fragility variable, based on the HDI.

The main contribution of the work is to make a joint analysis of the three determinants of economic growth and development, in which the literature is extremely scarce.

CONCLUSIONS

The main economic, social, and institutional determinants of development for the African Continent, for the years 1996 and 2014 are analyzed, assessing which of these determinants matters the most for African countries and if there are any similarities amongst them and also the evolution between the earlier and more recent year. Firstly, principal components analysis for categorical data to examine the relationships among the indicators is used. From this analysis, a new system emerges of three dimensions that are composed of all the active variables. Then, a cluster analysis was performed using these three dimensions, which resulted in a 4-cluster solution for both years.

Results indicate a positive association amongst institutional, economic, and social determinants of development, which means that countries that exhibit a good performance in institutional indicators also have a good performance in economic and social indicators, although results are not as clear for 2014 as they are for 1996. Additionally, a higher concentration of countries in the two clusters in which these three indicators are better in 2014 (31 countries in 1996 and 49 countries in 2014), seems to indicate a positive evolution for development of African countries from 1996 to 2014. Results show that policy makers should take an integrated view regarding development policies. This work adds to the literature, by taking an original integrated view on the economic, social, and institutional determinants of developments for the African continent.

ENDNOTES

* Alexandra Ferreira-Lopes, Helena Carvalho, Tiago Neves Sequeira, and Henrique Monteiro would like to thank the Portuguese National Science Foundation (FCT) for funding.

¹ Data analysis was conducted in IBM-SPSS Statistics 23.0.

² The presentation of the tables for institutional, economic, and social variables in appendixes B and C are restricted to the type of statistical measures that the variables in the database allows to compute.

APPENDIX A – DETAILED DEFINITIONS AND DATA SOURCES OF THE DATASET

TABLE A1. DETAILED INFORMATION ABOUT ECONOMIC VARIABLES

Variable	Start Year	End year	Interpretation/Range	Data Source
Business Freedom	1997	2014	The score for each country is a number between 0 and 100, with higher values corresponding to better outcomes.	Index of Economic Freedom from the Heritage Foundation
Fiscal Freedom	1996	2014	The score for each country is a number between 0 and 100, with higher values corresponding to better outcomes.	Index of Economic Freedom from the Heritage Foundation
Investment Freedom	1997	2014	The score for each country is a number between 0 and 100, with higher values corresponding to better outcomes.	Index of Economic Freedom from the Heritage Foundation
Monetary Freedom	1997	2014	The score for each country is a number between 0 and 100, with higher values corresponding to better outcomes.	Index of Economic Freedom from the Heritage Foundation
Trade Freedom	1996	2014	The score for each country is a number between 0 and 100, with higher values corresponding to better outcomes.	Index of Economic Freedom from the Heritage Foundation
GDP Growth Rate	1996	2014	%	Index of Economic Freedom from the Heritage Foundation
Government Spending Score	1996	2014	The scale for scoring government spending is non-linear and the minimum component score is zero.	Index of Economic Freedom from the Heritage Foundation
Delta 33	1996	2012	%	Databanks International
Economic Effectiveness (“ecoeff”)	1996	2013	The standardized categories are as follows: (0) – no fragility, greater than or equal to \$7500 (1) – low fragility, \$3000.00 to \$7499.99 (2) – medium fragility, \$1200.00 to \$2999.99 (3) – high fragility, \$500.00 to \$1199.99 (4) – extreme fragility, less than \$500	State Fragility Index from the Center for Systemic Peace
Economic Legitimacy (“ecoleg”)	1996	2013	The standardized categories are as follows: (0) – no fragility, greater than 40%	State Fragility Index from the Center for Systemic Peace

- (1) – low fragility, greater than 25% and less than or equal to 40%
 (2) – medium fragility, greater than 10% and less than or equal to 25%
 (3) – high fragility, less than or equal to 10%

TABLE A2. DETAILED INFORMATION ABOUT INSTITUTIONAL VARIABLES

Variable	Start Year	End year	Interpretation/Range	Data Source
Control of corruption	1996	2014	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.	Worldwide Governance Indicators (Kaufmann, 2010)
Government effectiveness	1996	2014	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.	Worldwide Governance Indicators (Kaufmann, 2010)
Political stability and absence of violence/terrorism	1996	2014	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.	Worldwide Governance Indicators (Kaufmann, 2010)
Regulatory quality	1996	2014	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.	Worldwide Governance Indicators (Kaufmann, 2010)
Rule of Law	1996	2014	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.	Worldwide Governance Indicators (Kaufmann, 2010)
Voice and accountability	1996	2014	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.	Worldwide Governance Indicators (Kaufmann, 2010)
Freedom from corruption	1996	2014	The score for each country is a number between 0 and 100, with higher values corresponding to better outcomes.	Index of Economic Freedom from the Heritage Foundation.

Property rights

1996 2014

It is scored between 0 and 100 and the more effective the legal protection of property, the higher a country's score. The definition of the different values is:

0 - Private property is banned, and all property belongs to the state. People do not have the right to sue others and do not have access to courts. Corruption is widespread.

10 - Private property is rarely protected, and nearly all property belongs to the state. Protection of property is almost impossible to impose. The judiciary is so corrupt that property is not protected successfully. Expropriation is common.

20 - Private property is feebly protected. The court system is so inefficient and corrupt that outside settlement and arbitration is the custom. Property rights are problematic to enforce. Judicial corruption is widespread. Expropriation is common.

30 - Property possession is weakly protected. The court system is highly inefficient. Corruption is general, and the judiciary is intensely influenced by other divisions of government. Expropriation is probable.

40 - The court system is highly inefficient, and postponements are so lengthy that they discourage recourse to courts. Corruption exists, and the judiciary is influenced by other offices of government. Expropriation is possible.

50 - The court system is inefficient and subject to deferrals. Corruption may be present, and the judiciary may be biased by other branches of government. Expropriation is possible but infrequent.

60 - Implementation of property rights is sloppy and subject to delays. Corruption is probable but rare, and the judiciary may be influenced by other divisions of government. Expropriation is improbable.

Index of Economic Freedom from the Heritage Foundation.

70 - Private property is assured by the government. The court system is subject to delays and negligent in imposing contracts. Corruption is possible but rare, and expropriation is unlikely.

80 - Private property is guaranteed by the government. The court system imposes contracts capably but with some deferrals. Corruption is marginal, and expropriation is very unlikely.

90 - Private property is assured by the government. The court system enforces contracts efficiently. The justice system penalizes those who seize private property illegitimately. Corruption is practically non-existent, and expropriation is highly unlikely.

100 - Private property is guaranteed by the government. The court system enforces contracts efficiently and swiftly. The justice system chastises those who confiscate private property illicitly. There is no corruption or expropriation.

Legis07	1996	2013	Index of seats	Databanks International
Legis08	1996	2013	Number	Databanks International
Polit06	1996	2013	The score can be: (1) Formal executive is premierial, including "Chairman, Council of Ministers" (2) Formal executive is non-premierial	Databanks International
Polit07	1996	2013	The score can be: (1) Monarch (2) President (3) Premier (4) Military (5) Other	Databanks International
Polit08	1996	2013	It is scored between: (1) Direct Election (2) Indirect Election	Databanks International

Polit09	1996	2013	(3) Non-elective It is scored between: (1) Irrelevant (2) Absent (3) Incomplete (4) Complete	Databanks International
Polit10	1996	2013	Number	Databanks International
Polit11	1996	2013	Number	Databanks International
Polit12	1996	2013	Number	Databanks International
Polit13	1996	2013	It is scored between: (1) None. (2) Ineffective (3) Partially Effective (4) Effective	Databanks International
Polit14	1996	2013	It is scored between: (1) None (2) Non-elective (3) Elective	Databanks International
Polit15	1996	2013	Number	Databanks International
S17F6/Domestic6	1996	2014	Number	Databanks International
Polity2	1996	2014	Ranges between -10 (strongly autocratic) and 10 (strongly democratic)	POLITY IV Project from the Center for Systemic Peace.
Durable	1996	2014	Number	POLITY IV Project from the Center for Systemic Peace.
Security effectiveness ("seceff")	1996	2014	The final values are converted into a four-point fragility scale: (0) – 0, no fragility (1) – 0.1-15, low fragility (2) – 15.1-100, medium fragility (3) – greater than 100, high fragility	State Fragility Index from the Center for Systemic Peace

Security legitimacy ("secleg")	1996	2014	The final values are converted into a four-point fragility scale: (0) – 1.0-2.0, no fragility (1) – 2.1-3.0, low fragility (2) – 3.1-4.0, medium fragility (3) – greater than 4.0, high fragility	State Fragility Index from the Center for Systemic Peace
Political effectiveness ("poleff")	1996	2014	The final values are converted into a four-point fragility scale: (0) – no fragility (1) – low fragility (2) – medium fragility (3) – high fragility	State Fragility Index from the Center for Systemic Peace
Political legitimacy ("polleg")	1996	2014	The final values are converted into a four-point fragility scale: (0) – no fragility (1) – low fragility (2) – medium fragility (3) – high fragility	State Fragility Index from the Center for Systemic Peace

TABLE A3. DETAILED INFORMATION ABOUT SOCIAL VARIABLES

Variable	Start Year	End year	Interpretation/Range	Data Source
Delta01	1996	2012	%	Databanks International
Delta02	1996	2012	%	Databanks International
Social effectiveness ("soceff")	1996	2013	It is scored as follows: (0) – no fragility, greater than 0.700 (1) – low fragility, greater than 0.600 and less than or equal to 0.700 (2) – medium fragility, greater than 0.400 and less than or equal to 0.600 (3) – high fragility, less than or equal to 0.400	State Fragility Index from the Center for Systemic Peace

APPENDIX B – RESULTS FOR 1996

FIGURE B1. VARIANCE ACCOUNTED FOR BY EACH DIMENSION

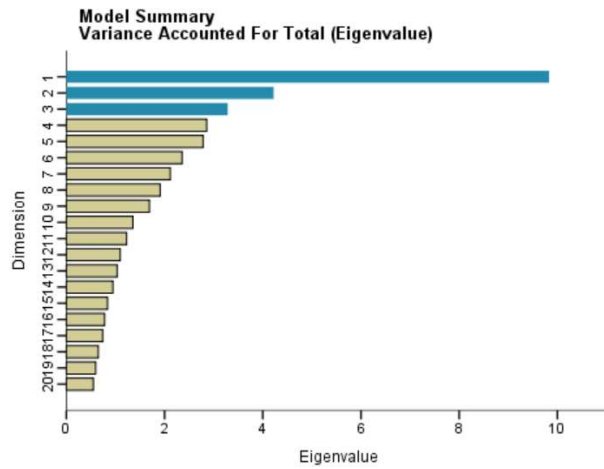


TABLE B1. COMPONENT LOADINGS OF THE VARIABLES IN THE THREE DIMENSIONS

	Dimension		
	1	2	3
Control of Corruption Rank	.836	-.045	-.116
Government Effectiveness Rank	.899	-.020	-.172
Political Stability and Absence of Violence/terrorism Rank	.871	.107	.069
Regulatory Quality Rank	.885	.223	-.216

Rule of Law Rank	.954	-0.009	-.129
Voice and Accountability Rank	.921	.137	.098
Freedom from Corruption	.251	.343	-.377
Fiscal Freedom	-0.005	.210	.299
Monetary Freedom	.450	.204	-.209
Trade Freedom	.015	.326	-.245
GDP Growth Rate (%)	.140	-.186	-.315
polity2	.394	.116	.256
durable	.431	-.269	.010
delta01 (%)	-.281	.671	.127
delta02 (%)	-.345	.577	.125
delta33 (%)	.242	-.067	-.076
legis07	.165	.165	.337
Index (legis08)	.543	.246	.500
Size of Cabinet (polit10)	.095	.084	.307
S17F6/Domestic 6	-.502	-.127	.330
Security Effectiveness (Seceff)	-.603	-.223	.063
Security Legitimacy ("secleg")	-.510	.505	-.377
Political Effectiveness ("poleff")	-.567	.047	.102
Political Legitimacy ("polleg")	-.571	.468	-.052
Economic Effectiveness ("ecoeff")	-.591	-.051	-.071
Economic Legitimacy ("ecoleg")	-.576	.538	-.172
Social Effectiveness ("soceff")	-.453	.573	-.219
Property Right	.373	.141	-.484

Gov't Spending	.240	.077	-.030
Business Freedom	.229	.488	-.179
Investment Freedom	.494	.276	-.286
polit11	-.102	.158	.499
polit12	-.150	.206	.448
polit06	-.005	-.070	-.543
polit07	-.426	-.624	-.181
polit08	-.390	-.529	-.185
polit09	.495	-.506	.387
polit13	.311	.099	.611
polit14	.432	.463	.175
polit15	-.119	.320	.322

FIGURE B2(A). WARD METHOD - 1996

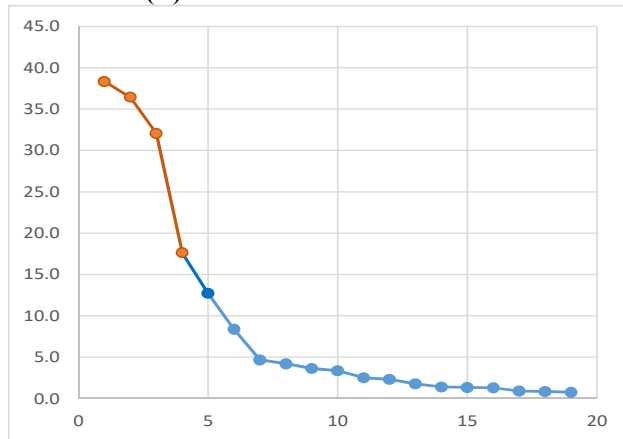


FIGURE B2(B). FURTHEST METHOD - 1996

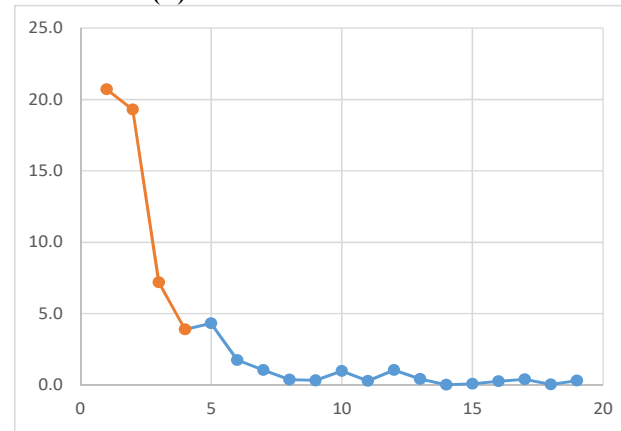


TABLE B2. DISTRIBUTION OF THE COUNTRIES BY TYPE

Typology.1996	Number of countries	Country
Type 1	1	Congo, Dem. Rep.
	2	Eritrea
	3	Liberia
	4	Libya
	5	Nigeria
	6	Rwanda
	7	Somalia
	Total N	7
Type 2	1	Mauritius

	Total N		1
Type 3	1	Angola	
	2	Burundi	
	3	Cameroon	
	4	Central African Republic	
	5	Comoros	
	6	Congo, Rep.	
	7	Ethiopia	
	8	Guinea	
	9	Guinea-Bissau	
	10	Madagascar	
	11	Mauritania	
	12	Niger	
	13	São Tomé e Príncipe	
	14	Sierra Leone	
	15	Sudan	
	Total N		15
Type 4	1	Argelia	
	2	Benin	
	3	Botswana	
	4	Burkina Faso	
	5	Cape Verde	
	6	Chad	
	7	Côte D'Ivoire	
	8	Djibouti	
	9	Egypt, Arab Rep.	
	10	Equatorial	
	11	Gabon	
	12	Gambia	
	13	Ghana	
	14	Kenya	
	15	Lesotho	

	16	Malawi	
	17	Mali	
	18	Morocco	
	19	Mozambique	
	20	Namibia	
	21	Senegal	
	22	Seychelles	
	23	South Africa	
	24	Swaziland	
	25	Tanzania	
	26	Togo	
	27	Tunisia	
	28	Uganda	
	29	Zambia	
	30	Zimbabwe	
	Total N		30
Total	N		53

TABLE B3. DISTRIBUTION OF THE INSTITUTIONAL INDICATORS BY TYPE (MEAN AND MEDIAN)

	Typology (1996)							
	Type 1		Type 2		Type 3		Type 4	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Control of Corruption Rank	18.40	8.78	73.17	73.17	22.70	11.71	43.16	40.49
Government Effectiveness Rank	8.92	11.22	63.41	63.41	14.80	8.29	40.69	42.93
Political Stability and Absence of Violence/terrorism Rank	7.28	3.85	84.13	84.13	24.65	11.54	40.95	36.30
Regulatory Quality Rank	7.42	3.43	50.49	50.49	14.90	14.22	38.55	36.52
Rule of Law Rank	9.84	2.39	78.47	78.47	15.34	7.66	37.93	34.21
Voice and Accountability Rank	6.52	6.25	73.08	73.08	19.52	17.79	34.85	32.69
Freedom from Corruption	55.53	54.70	.	.	53.06	50.55	64.53	63.60
polity2	-3.57	-6.00	10.00	10.00	0.14	0.00	-0.59	-2.00
Durable	8.86	2.00	28.00	28.00	4.29	1.50	11.55	5.00
legis07	91.14	0.00	110.00	110.00	177.13	161.00	141.17	132.50
Index (legis08)	2.71	2.00	10.00	10.00	7.07	7.00	6.60	8.00

Size of Cabinet (polit10) 19.43 23.00 31.00 31.00 23.93 23.00 22.97 24.50

TABLE B4. DISTRIBUTION OF THE INSTITUTIONAL INDICATORS BY TYPE (MINIMUM AND MAXIMUM)

	Typology (1996)							
	Type 1		Type 2		Type 3		Type 4	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Control of Corruption Rank	0.00	70.24	73.17	73.17	4.88	63.90	6.34	82.44
Government Effectiveness Rank	0.49	19.02	63.41	63.41	2.93	52.20	9.27	79.02
Political Stability and Absence of Violence/terrorism Rank	0.00	17.31	84.13	84.13	1.92	81.73	4.33	81.73
Regulatory Quality Rank	0.00	22.55	50.49	50.49	4.41	27.45	5.88	75.00
Rule of Law Rank	0.00	38.76	78.47	78.47	0.96	54.55	11.00	75.60
Voice and Accountability Rank	0.00	12.98	73.08	73.08	2.40	56.73	6.73	74.52
Freedom from Corruption	33.30	78.60	.	.	32.90	74.80	48.80	81.30
polity2	-7.00	0.00	10.00	10.00	-7.00	9.00	-9.00	9.00
Durable	0.00	45.00	28.00	28.00	0.00	34.00	0.00	44.00
legis07	0.00	538.00	110.00	110.00	0.00	357.00	0.00	529.00
Index (legis08)	0.00	7.00	10.00	10.00	2.00	10.00	0.00	10.00
Size of Cabinet (polit10)	0.00	28.00	31.00	31.00	10.00	35.00	11.00	33.00

TABLE B5. DISTRIBUTION OF OTHER INSTITUTIONAL INDICATORS BY TYPE

		Typology (1996)							
		Type 1		Type 2		Type 3		Type 4	
		N	%	N	%	N	%	N	%
S17F6/Domestic 6	0	3	50.0	1	100.0	7	46.7	29	96.7
	1	2	33.3	0	0.0	6	40.0	1	3.3
	2	1	16.7	0	0.0	2	13.3	0	0.0
	Total	6	100.0	1	100.0	15	100.0	30	100.0
Security Effectiveness (“Seceff”)	No fragility	1	14.3	1	100.0	1	7.7	9	31.0
	Low fragility	2	28.6	0	0.0	5	38.5	12	41.4
	Medium fragility	1	14.3	0	0.0	2	15.4	6	20.7
	High fragility	3	42.9	0	0.0	5	38.5	2	6.9
	Total	7	100.0	1	100.0	13	100.0	29	100.0
Security Legitimacy (“secleg”)	No fragility	0	0.0	1	100.0	0	0.0	0	0.0

	Low fragility	2	28.6	0	0.0	0	0.0	7	24.1
	Medium fragility	3	42.9	0	0.0	4	30.8	10	34.5
	High fragility	2	28.6	0	0.0	9	69.2	12	41.4
	Total	7	100.0	1	100.0	13	100.0	29	100.0
Political Effectiveness (“poleff”)	No fragility	1	14.3	1	100.0	0	0.0	11	37.9
	Low fragility	1	14.3	0	0.0	3	23.1	8	27.6
	Medium fragility	4	57.1	0	0.0	3	23.1	8	27.6
	High fragility	1	14.3	0	0.0	7	53.8	2	6.9
	Total	7	100.0	1	100.0	13	100.0	29	100.0
Political Legitimacy (“polleg”)	Low fragility	1	14.3	1	100.0	0	0.0	3	10.3
	Medium fragility	1	14.3	0	0.0	0	0.0	6	20.7
	High fragility	5	71.4	0	0.0	13	100.0	20	69.0
	Total	7	100.0	1	100.0	13	100.0	29	100.0
Property Right	10	2	66.7	0	0.0	6	60.0	3	13.0
	30	0	0.0	0	0.0	4	40.0	8	34.8
	50	1	33.3	0	0.0	0	0.0	10	43.5
	70	0	0.0	0	0.0	0	0.0	2	8.7
	Total	3	100.0	0	0.0	10	100.0	23	100.0
polit06	1	3	42.9	1	100.0	14	93.3	21	70.0
	2	4	57.1	0	.0	1	6.7	9	30.0
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit07	1	0	0.0	0	.0	0	.0	2	6.7
	2	2	28.6	0	.0	14	93.3	27	90.0
	3	0	0.0	1	100.0	1	6.7	1	3.3
	4	1	14.3	0	0.0	0	0.0	0	0.0
	5	4	57.1	0	0.0	0	0.0	0	0.0
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit08	1	0	0.0	0	.0	11	73.3	25	83.3
	2	0	0.0	1	100.0	2	13.3	3	10.0
	3	7	100.0	0	.0	2	13.3	2	6.7
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit09	1	4	57.1	0	0.0	1	6.7	9	30.0
	2	3	42.9	0	0.0	9	60.0	15	50.0
	3	0	0.0	0	0.0	5	33.3	6	20.0

	4	0	0.0	1	100.0	0	0.0	0	0.0
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit11	0	6	85.7	1	100.0	2	13.3	19	63.3
	1	0	0.0	0	0.0	7	46.7	10	33.3
	2	1	14.3	0	0.0	5	33.3	0	0.0
	3	0	0.0	0	0.0	1	6.7	1	3.3
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit12	0	6	85.7	1	100.0	10	66.7	28	93.3
	1	1	14.3	0	0.0	3	20.0	2	6.7
	2	0	0.0	0	0.0	2	13.3	0	0.0
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit13	1	2	28.6	0	.0	0	.0	3	10.0
	2	5	71.4	0	.0	11	73.3	14	46.7
	3	0	0.0	1	100.0	4	26.7	12	40.0
	4	0	0.0	0	.0	0	0.0	1	3.3
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit14	1	2	28.6	0	0.0	0	0.0	3	10.0
	2	4	57.1	0	0.0	0	0.0	0	0.0
	3	1	14.3	1	100.0	15	100.0	27	90.0
	Total	7	100.0	1	100.0	15	100.0	30	100.0
polit15	1	7	100.0	1	100.0	10	66.7	26	86.7
	2	0	0.0	0	0.0	5	33.3	4	13.3
	Total	7	100.0	1	100.0	15	100.0	30	100.0

TABLE B6. DISTRIBUTION OF THE ECONOMIC INDICATORS BY TYPE (MEAN AND MEDIAN)

	Typology (1996)							
	Type 1		Type 2		Type 3		Type 4	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fiscal Freedom	56.73	73.00	.	.	74.64	87.65	70.66	74.10
Gov't Spending	50.00	55.00	.	.	58.00	55.00	61.77	55.00
Business Freedom	47.50	47.50	.	.	56.50	55.00	61.35	55.00
Monetary Freedom	38.75	46.90	.	.	54.45	58.80	64.70	65.30
Trade Freedom	35.67	34.00	.	.	41.24	44.40	50.93	53.80
Investment Freedom	35.00	30.00	.	.	37.27	30.00	54.44	50.00

GDP Growth Rate (%)	6.41	4.65	5.20	5.20	1.70	4.52	7.18	6.38
delta33 (%)	342.50	653.00	976.00	976.00	-196.79	.00	785.40	596.00

TABLE B7. DISTRIBUTION OF THE ECONOMIC INDICATORS BY TYPE (MINIMUM AND MAXIMUM)

	Typology (1996)									
	Type 1		Type 2		Type 3		Type 4			
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Fiscal Freedom	0.00	97.20	.	.	0.00	92.00	30.90	90.60		
Gov't Spending	40.00	55.00	.	.	40.00	70.00	40.00	85.00		
Business Freedom	40.00	55.00	.	.	40.00	70.00	40.00	85.00		
Monetary Freedom	0.00	61.20	.	.	0.00	80.30	38.60	81.40		
Trade Freedom	24.00	49.00	.	.	16.20	70.20	23.60	74.00		
Investment Freedom	10.00	70.00	.	.	30.00	50.00	30.00	70.00		
GDP Growth Rate (%)	1.97	12.70	5.20	5.20	-24.80	20.00	-5.11	29.11		
delta33 (%)	-769.00	833.00	976.00	976.00	-3415.00	1111.00	-1429.00	4167.00		

TABLE B8. DISTRIBUTION OF OTHER ECONOMIC INDICATORS BY TYPE

		Typology (1996)									
		Type 1		Type 2		Type 3		Type 4			
		N	%	N	%	N	%	N	%	N	%
Economic Effectiveness ("ecoeff")	No fragility	0	0.0	1	100.0	1	7.7	9	31.0		
	Low fragility	0	0.0	0	0.0	2	15.4	3	10.3		
	Medium fragility	1	14.3	0	0.0	3	23.1	4	13.8		
	High fragility	6	85.7	0	0.0	7	53.8	13	44.8		
	Total	7	100.0	1	100.0	13	100.0	29	100.0		
Economic Legitimacy ("ecoleg")	No fragility	0	0.0	0	0.0	0	0.0	0	0.0		
	Low fragility	1	14.3	1	100.0	0	0.0	2	6.9		
	Medium fragility	1	14.3	0	0.0	2	15.4	11	37.9		
	High fragility	5	71.4	0	0.0	11	84.6	16	55.2		
	Total	7	100.0	1	100.0	13	100.0	29	100.0		

TABLE B9. DISTRIBUTION OF THE SOCIAL INDICATORS BY TYPE (MEAN AND MEDIAN)

	Typology (1996)							
	Type 1		Type 2		Type 3		Type 4	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
delta01 (%)	189.14	170.00	107.00	107.00	273.73	280.00	241.97	252.00
delta02 (%)	207.71	263.00	107.00	107.00	266.40	277.00	239.87	249.50

TABLE B10. DISTRIBUTION OF THE SOCIAL INDICATORS BY TYPE (MINIMUM AND MAXIMUM)

	Typology (1996)							
	Type 1		Type 2		Type 3		Type 4	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
delta01 (%)	47.00	353.00	107.00	107.00	118.00	434.00	24.00	401.00
delta02 (%)	63.00	353.00	107.00	107.00	115.00	434.00	83.00	441.00

TABLE B11. DISTRIBUTION OF OTHER SOCIAL INDICATORS BY TYPE

		Typology (1996)							
		Type 1		Type 2		Type 3		Type 4	
		N	%	N	%	N	%	N	%
Social Effectiveness (“soceff”)	No fragility	1	14.3	0	0.0	0	0.0	0	0.0
	Low fragility	0	.0	1	100.0	0	0.0	2	6.9
	Medium fragility	1	14.3	0	0.0	0	0.0	7	24.1
	High fragility	5	71.4	0	0.0	13	100.0	20	69.0
	Total	7	100.0	1	100.0	13	100.0	29	100.0

APPENDIX C – RESULTS FOR 2014

FIGURE C1. VARIANCE ACCOUNTED FOR BY EACH DIMENSION

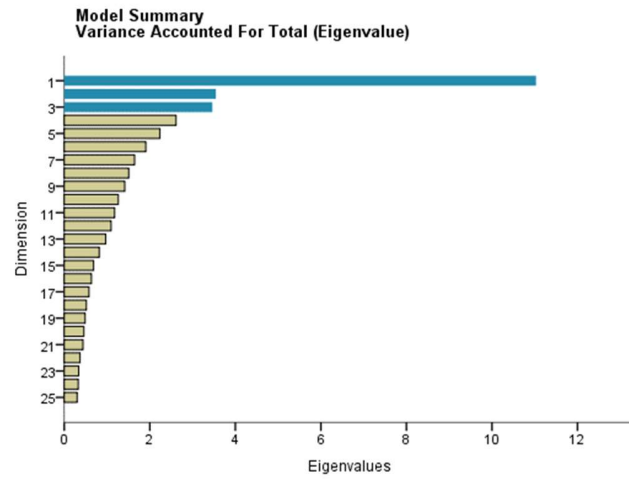


TABLE C1. COMPONENT LOADINGS OF THE VARIABLES IN THE THREE DIMENSIONS

	Dimension		
	1	2	3
Control of Corruption Rank	.892	-.034	-.009
Government Effectiveness Rank	.917	-.021	.005
Political Stability and Absence of Violence/terrorism Rank	.792	-.246	.072
Regulatory Quality Rank	.929	.005	.169

Rule of Law Rank	.947	-.008	.064
Voice and Accountability Rank	.857	.096	.094
Freedom from Corruption	.927	.007	.029
Polity2	.442	.064	.007
Durable	.539	-.287	.032
legis07	-.084	.552	-.170
legis08	.462	.356	.106
polit10	-.160	.438	.232
Fiscal Freedom	.176	.381	-.196
Gov't Spending	-.134	-.338	.554
Business Freedom	.726	.124	-.197
Monetary Freedom	.390	.116	.423
Trade Freedom	.408	.070	.032
Investment Freedom	.672	-.119	.363
GDP Growth Rate (%)	-.147	.609	-.405
delta01 (%)	-.579	.097	.599
delta02 (%)	-.510	.066	.601
delta33 (%)	.009	-.358	-.314
S17F6/Domestic 6	-.214	.423	-.048
Security Effectiveness (Seceff)	-.377	-.307	-.505
Security Legitimacy ("secleg")	-.484	-.376	-.457
Political Effectiveness ("poleff")	-.594	.185	.046
Political Legitimacy ("polleg")	-.428	.265	-.156
Property Right	.751	-.199	-.204

Economic Effectiveness (“ecoeff”)	-474	-.190	.434
Economic Legitimacy (“ecoleg”)	-.507	.021	-.151
Social Effectiveness (“soceff”)	-463	-.430	.117
polit11	-.162	.377	.288
polit12	-.200	.606	-.109
polit06	.011	-.306	-.054
polit07	-.009	.388	-.218
polit08	.208	.060	-.668
polit09	.177	.345	-.104
polit13	.443	.136	.043
polit14	.352	.511	.336
polit15	-.189	.085	.405

FIGURE C2(A). WARD METHOD - 2014

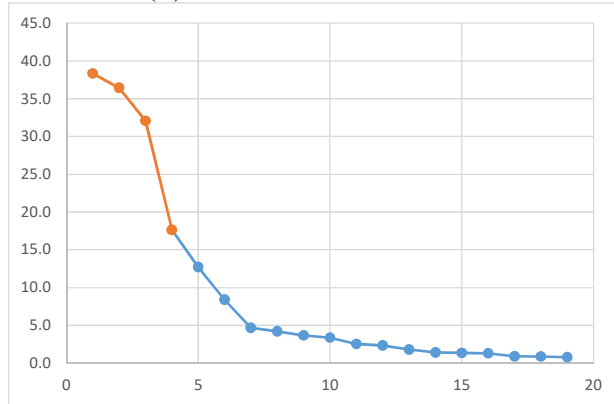


FIGURE C2(B). FURTHEST METHOD - 2014

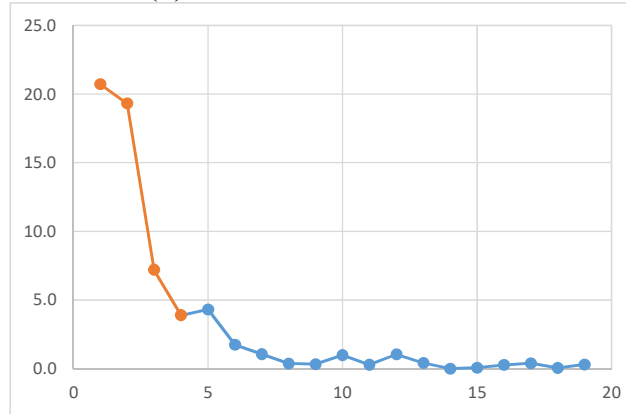


TABLE C2. DISTRIBUTION OF THE COUNTRIES BY TYPES

Typology.2014	Number of Countries	Country
Type 1	1	Eritrea
	2	Somalia
	3	Sudan
	Total N	3
Type 2	1	Algeria
	2	Angola
	3	Benin
	4	Burkina Faso
	5	Burundi

6	Cameroon
7	Central African Republic
8	Chad
9	Comoros
10	Congo, Dem. Rep.
11	Congo, Rep.
12	Côte D'Ivoire
13	Djibouti
14	Egypt, Arab. Rep.
15	Equatorial Guinea
16	Ethiopia
17	Gabon
18	Gambia, The
19	Guinea
20	Guinea-Bissau
21	Kenya
22	Liberia
23	Madagascar
24	Malawi
25	Mali
26	Mauritania
27	Mozambique
28	Niger
29	Nigeria
30	Rwanda
31	Senegal
32	Sierra Leone
33	Swaziland
34	Tanzania
35	Togo
36	Uganda
37	Zambia
38	Zimbabwe
Total N	

Type 3	1	Libya	
	Total N		1
Type 4	1	Botswana	
	2	Cape Verde	
	3	Ghana	
	4	Lesotho	
	5	Mauritius	
	6	Morocco	
	7	Namibia	
	8	São Tomé and Príncipe	
	9	Seychelles	
	10	South Africa	
	11	Tunisia	
	Total N		11
Total	N		53

TABLE C3. DISTRIBUTION OF THE INSTITUTIONAL INDICATORS BY TYPE (MEAN AND MEDIAN)

	Typology.2014							
	Type 1		Type 2		Type 3		Type 4	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ContrCorrup	8.17	3.85	23.90	23.32	1.44	1.44	61.67	61.06
GovEffect	2.40	3.37	20.57	18.27	2.88	2.88	53.41	55.29
PolStab	8.74	3.88	24.90	24.27	4.37	4.37	50.84	52.91
RegQual	3.04	1.44	24.90	25.48	0.48	0.48	52.05	52.40
RuleLaw	4.33	3.37	25.22	23.56	2.88	2.88	59.18	62.50
VoiceAccount	1.97	1.48	26.99	23.89	16.26	16.26	58.98	61.58
FreedCorrup	12.55	9.76	25.46	25.29	18.31	18.31	44.21	41.61
polity2	-2.00	-4.00	1.95	4.00	0.00	0.00	6.89	8.00
durable	8.67	3.00	12.61	12.00	0.00	0.00	26.11	23.00
legis07	70.67	100.00	187.14	167.00	513.00	513.00	195.00	182.00
legis08	1.67	0.00	4.43	4.00	5.00	5.00	5.64	5.00

polit10 20.33 19.00 27.42 27.50 28.00 28.00 23.55 24.00

TABLE C4. DISTRIBUTION OF THE INSTITUTIONAL INDICATORS BY TYPE (MINIMUM AND MAXIMUM)

Typology.2014

	Type 1		Type 2		Type 3		Type 4	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
ContrCorrup	0.48	20.19	0.00	76.92	1.44	1.44	50.48	79.81
GovEffect	0.00	3.85	1.44	56.25	2.88	2.88	18.27	82.69
PolStab	1.94	20.39	0.49	55.34	4.37	4.37	15.05	85.44
RegQual	0.96	6.73	2.40	58.65	0.48	0.48	25.48	80.77
RuleLaw	0.00	9.62	1.44	61.06	2.88	2.88	19.71	78.85
VoiceAccount	0.49	3.94	1.97	57.64	16.26	16.26	28.08	76.35
FreedCorrup	5.00	22.88	15.86	46.86	18.31	18.31	32.55	61.24
polity2	-7.00	5.00	-9.00	9.00	0.00	0.00	-4.00	10.00
durable	2.00	21.00	0.00	45.00	0.00	0.00	0.00	49.00
legis07	0.00	112.00	0.00	806.00	513.00	513.00	110.00	369.00
legis08	0.00	5.00	0.00	6.00	5.00	5.00	4.00	10.00
polit10	12.00	30.00	11.00	38.00	28.00	28.00	14.00	36.00

TABLE C5. DISTRIBUTION OF OTHER INSTITUTIONAL INDICATORS BY TYPE

Typology.2014

	Type 1		Type 2		Type 3		Type 4		
	N	%	N	%	N	%	N	%	
S17F6	0	2	66.7	16	44.4	0	0.0	8	72.7
	1	0	0.0	10	27.8	1	100.0	0	0.0
	2	1	33.3	6	16.7	0	0.0	1	9.1
	3	0	0.0	1	2.8	0	0.0	0	0.0
	4	0	0.0	2	5.6	0	0.0	1	9.1
	7	0	0.0	1	2.8	0	0.0	0	0.0
	8	0	0.0	0	0.0	0	0.0	1	9.1
	Total	3	100.0	36	100.0	1	100.0	11	100.0
Seceff	0	1	33.3	23	60.5	0	0.0	9	100.0
	1	0	0.0	7	18.4	1	100.0	0	0.0

	2	0	0.0	7	18.4	0	0.0	0	0.0
	3	2	66.7	1	2.6	0	0.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	9	100.0
secleg	0	0	0.0	3	7.9	0	0.0	5	55.6
	1	0	0.0	22	57.9	0	0.0	4	44.4
	2	0	0.0	10	26.3	1	100.0	0	0.0
	3	3	100.0	3	7.9	0	.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	9	100.0
poleff	0	0	0.0	6	15.8	0	.0	5	55.6
	1	1	33.3	9	23.7	0	.0	3	33.3
	2	1	33.3	10	26.3	0	.0	1	11.1
	3	1	33.3	13	34.2	1	100.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	9	100.0
polleg	0	1	33.3	13	34.2	0	0.0	7	77.8
	1	1	33.3	13	34.2	0	0.0	1	11.1
	2	0	0.0	5	13.2	0	0.0	1	11.1
	3	1	33.3	7	18.4	1	100.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	9	100.0
propright	10	1	100.0	5	13.2	1	100.0	0	0.0
	15	0	0.0	2	5.3	0	0.0	0	0.0
	20	0	0.0	6	15.8	0	0.0	1	9.1
	25	0	0.0	1	2.6	0	0.0	0	0.0
	30	0	0.0	19	50.0	0	0.0	1	9.1
	40	0	0.0	4	10.5	0	0.0	3	27.3
	45	0	0.0	1	2.6	0	0.0	0	0.0
	50	0	0.0	0	0.0	0	0.0	3	27.3
	65	0	0.0	0	0.0	0	0.0	1	9.1
	70	0	0.0	0	0.0	0	0.0	2	18.2
	Total	1	100.0	38	100.0	1	100.0	11	100.0
polit06	1	1	33.3	26	68.4	1	100.0	7	63.6
	2	2	66.7	12	31.6	0	0.0	4	36.4
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit07	1	0	0.0	1	2.6	0	0.0	1	9.1
	2	3	100.0	35	92.1	0	0.0	8	72.7

	3	0	0.0	1	2.6	1	100.0	2	18.2
	4	0	0.0	1	2.6	0	0.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit08	1	1	33.3	32	84.2	0	.0	6	54.5
	2	1	33.3	2	5.3	1	100.0	4	36.4
	3	1	33.3	4	10.5	0	0.0	1	9.1
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit09	1	2	66.7	14	36.8	0	0.0	4	36.4
	2	1	33.3	19	50.0	0	0.0	2	18.2
	3	0	0.0	5	13.2	0	0.0	4	36.4
	4	0	0.0	0	0.0	1	100.0	1	9.1
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit11	0	3	100.0	22	57.9	0	.0	10	90.9
	1	0	0.0	16	42.1	1	100.0	1	9.1
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit12	0	3	100.0	34	89.5	0	0.0	11	100.0
	1	0	0.0	4	10.5	1	100.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit13	1	0	0.0	2	5.3	0	0.0	0	0.0
	2	3	100.0	23	60.5	0	0.0	1	9.1
	3	0	0.0	13	34.2	1	100.0	7	63.6
	4	0	0.0	0	0.0	0	0.0	3	27.3
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit14	1	0	0.0	1	2.6	0	0.0	0	0.0
	2	2	66.7	1	2.6	0	0.0	0	0.0
	3	1	33.3	36	94.7	1	100.0	11	100.0
	Total	3	100.0	38	100.0	1	100.0	11	100.0
polit15	1	3	100.0	26	68.4	1	100.0	11	100.0
	2	0	0.0	12	31.6	0	0.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	11	100.0

TABLE C6. DISTRIBUTION OF THE ECONOMIC INDICATORS BY TYPE (MEAN AND MEDIAN)

Typology.2014

Type 1

Type 2

Type 3

Type 4

	Mean	Median	Mean	Median	Mean	Median	Mean	Median
FisFreed	71.03	71.03	75.55	77.12	94.99	94.99	77.11	76.81
GovSpend	78.21	78.21	76.69	79.70	.00	.00	59.00	64.12
BusFreed	36.55	36.55	49.58	48.00	50.10	50.10	67.21	67.60
MonFreed	56.67	56.67	72.44	72.96	66.93	66.93	74.29	75.33
TradeFreed	62.37	62.37	66.98	66.72	.	.	69.33	69.60
InvestFreed	7.50	7.50	47.50	50.00	5.00	5.00	60.00	55.00
GDPGR	1.31	1.31	5.14	4.72	104.48	104.48	3.85	3.82
delta33	2040.50	2040.50	407.92	230.00	.	.	853.09	877.00

TABLE C7. DISTRIBUTION OF THE ECONOMIC INDICATORS BY TYPE (MINIMUM AND MAXIMUM)

	Typology.2014							
	Type 1		Type 2		Type 3		Type 4	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
FisFreed	57.00	85.05	46.16	90.77	94.99	94.99	66.91	92.15
GovSpend	66.08	90.34	50.98	92.59	.00	.00	.00	83.28
BusFreed	18.60	54.50	24.90	69.60	50.10	50.10	52.60	80.70
MonFreed	55.77	57.56	58.99	88.32	66.93	66.93	65.81	79.08
TradeFreed	55.60	69.14	51.80	84.62	.	.	33.40	88.64
InvestFreed	.00	15.00	5.00	70.00	5.00	5.00	35.00	85.00
GDPGR	-4.40	7.02	-1.49	19.77	104.48	104.48	2.55	6.98
delta33	1500.00	2581.00	-1207.00	2553.00	.	.	-313.00	1884.00

TABLE C8. DISTRIBUTION OF OTHER ECONOMIC INDICATORS BY TYPE

	Typology.2014											
	Type 1			Type 2			Type 3			Type 4		
	N	%		N	%		N	%		N	%	
ecoeff	0	0	0.0	1	2.6		0	.0		0	.0	
	1	0	0.0	2	5.3		1	100.0		5	55.6	
	2	0	0.0	3	7.9		0	0.0		2	22.2	
	3	3	100.0	32	84.2		0	0.0		2	22.2	
	Total	3	100.0	38	100.0		1	100.0		9	100.0	
ecoleg	0	0	0.0	2	5.3		0	0.0		7	77.8	

1	0	0.0	5	13.2	0	0.0	1	11.1
2	1	33.3	12	31.6	0	0.0	1	11.1
3	2	66.7	19	50.0	1	100.0	0	0.0
Total	3	100.0	38	100.0	1	100.0	9	100.0

TABLE C9. DISTRIBUTION OF THE SOCIAL INDICATORS BY TYPE (MEAN AND MEDIAN)

		Type 1		Type 2		Type 3		Type 4	
		Mean	Median	Mean	Median	Mean	Median	Mean	Median
delta01		196.33	188.00	256.13	260.00	201.00	201.00	103.09	105.00
delta02		190.33	179.00	256.68	259.50	202.00	202.00	118.36	112.00

TABLE C10. DISTRIBUTION OF THE SOCIAL INDICATORS BY TYPE (MINIMUM AND MAXIMUM)

		Type 1		Type 2		Type 3		Type 4	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
delta01		160.00	241.00	123.00	435.00	201.00	201.00	-41.00	220.00
delta02		155.00	237.00	121.00	443.00	202.00	202.00	-3.00	244.00

TABLE C11. DISTRIBUTION OF OTHER SOCIAL INDICATORS BY TYPE

		Type 1		Type 2		Type 3		Type 4	
		N	%	N	%	N	%	N	%
soceff	0	0	.0	1	2.6	1	100.0	2	22.2
	1	0	.0	1	2.6	0	0.0	5	55.6
	2	1	33.3	26	68.4	0	0.0	2	22.2
	3	2	66.7	10	26.3	0	0.0	0	0.0
	Total	3	100.0	38	100.0	1	100.0	9	100.0

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*Alexandra Ferreira-Lopes, Helena Carvalho, Tiago Neves Sequeira, and Henrique Monteiro would like to thank the Portuguese National Science Foundation (FCT) for funding.

¹ Data analysis was conducted in IBM-SPSS Statistics 23.0.

² The presentation of the tables for institutional, economic, and social variables in appendixes B and C are restricted to the type of statistical measures that the variables in the database allows to compute.