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A Panel Study of Social Capabilities and their effect on economic performance in Sub-Saharan Africa

by

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ABSTRACT: Sub-Saharan Africa is an area of contradictions as it sits on heaps of natural resources and at the same time the highest number of people ever living in poverty. They are in dire need of an economic catch up, however it is unclear if they have what it takes to manage this type of sustained economic growth. Through a social capabilities framework this study evaluates the economy from a more total perspective rather than focusing on a specific economic driving force. The five countries chosen for this study have the highest levels of GDP per capita on the continent. The social capabilities evaluate four aspects of the economy; *transformation, inclusion, state autonomy* and *accountability*, and with a panel data approach as well as graphical analysis the economic performance is evaluated based on GDP per capita growth and resilience to shrinking. It is not possible to determine what effect the indicators of the capabilities have had on economic growth due to model limitations, however it is concluded that several of the indicators have played a role in the economic performance due to driving the GDP growth. It is also theorized that it is likely that some of the indicators have played a role in the decreasing frequency of economic shrinking.

KEYWORDS: Social Capabilities, Catching Up, Sub-Saharan Africa, Economic Development

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1   Introduction

Do African countries have the potential to become economic powerhouses in the future? For years, economists have been talking about the potential which exists within the African continent and the last decades have been economic successes in many ways. Several countries have experienced consecutive years of economic growth, bigger than many industrialized countries (Bughin et al. 2016; Leke & Barton, 2016; Young, 2012). One of the clearest examples being Botswana, who averaged a growth rate of 9 percent between the years 1965 and 2006, thereby managing to move from among the poorest countries in the world to being classified as an upper middle income one (Maipose, 2008). Part of Botswana's success stems from their access to minerals and diamonds, something that several other countries on the continent have, which can offer a well of potential income and work opportunities. Other factors which should work in favour of African economic growth is the population demographic. The population trend of the continent differs from the rest of the world by being made up of a majority of young people rather than the middle-aged and elderly and is set to keep growing for several more decades (Bakilana, 2015). This growing population should make it possible to increase labour intensive production at a rapid pace which has been a successful route for past economic growth. Beyond these basic factors, the fact that the continent is technologically backwards might also offer an opportunity for rapid economic growth, as being technologically backwards has been described as an opportunity for quick catch up. Abramovitz (1986) theorized that there should be no need for those who are technologically backwards to go through every stage of industrialization and innovation to reach a high technological level. Instead they should be able to make leaps in their development process and through this achieve a rapid economic catch up, outpacing the speed of the economic leaders substantially.

Despite these basic factors seeming to offer much potential for the African continent, the economies of the world have been diverging for decades where Africa, parts of Asia and Latin America have been falling further and further behind the industrialized west (Pritchett, 1997). When it comes to the African countries, only a handful of countries have been succeeding in their economic development, leaving the rest of the continent behind. This trend is similar across the globe where, besides a few outliers, it is really only the East Asian countries and

China who have been able to create a catch up effect strong enough to actually graduate into upper-middle and high income countries and today match the western economic leaders (Abramovitz, 1986). This trend points towards there being more important factors going into catching up than simply creating economic growth.

A closer look at the countries who have been falling behind shows that creating growth does not seem to be the biggest problem, but rather sustaining it over longer periods of time. There are a number of researchers who have observed and commented on this phenomenon where Easterly, Kremer, Pritchett and Summers (1993) observe that few countries manage to keep a high level of growth decade after decade, but that poor countries are especially vulnerable to economic shocks and negative growth. Hausmann, Rodriguez and Wagner's (2006) analysis into why some countries have a harder time leaving an economic recession and why it turns into economic shrinking find that the density of export product space is important.

Approaching a more encompassing picture of an economy and the idea that an economy is dependent on a bigger set of interconnected actions which manage to create a state which is impersonal and equal to all, has been theorized most notably by North, Wallis and Weingast (2009). By managing to create open competition to benefit all, rather than maintaining social stability through rent seeking behaviour of the rich, the growth created will be more stable and inclusive. Maipose (2008) argue that in the case of Botswana, they have managed to supply good governance and stable macroeconomic policies over a long period of time, echoing the ideas of a more impersonal state generating stable economic growth. Most importantly they have managed to avoid the "Dutch-disease" in regards to their natural resources and have a functioning system for public accountability.

With these ideas in mind and a clear need to research the growth performance of the African continent as they have a big need for economic growth, this research will strive to look into how well functioning the countries of the Sub-Saharan are. These ideas are not new and one question in regards to this type of analytical approach has persevered; how can the ideas of a more complex and sophisticated state be quantified? For example, the ideas by Abramovitz (1986) simply stated that a nation should be *"socially advanced"* to catch up, without specifying what this meant. For this purpose, Andersson and Palacio (2017) created a framework which is based on four social capabilities; *transformation, inclusion, state autonomy* and *accountability.* In many ways the framework is similar to the ideas of North, Wallis and

Weingast (2009) in that a more impersonal and competitive state and market creates a more stable economy.

1.1   Aim and Scope of Research

The aim of this research is to evaluate the economic performance of a select number of Sub-Saharan African countries based on the social capabilities as estimated by Andersson and Palacio (2017). To be a bit more specific, the analysis will focus on how the evolution of the social capabilities has affected the economic performance represented as GDP per capita growth as well as theorizing on if this has caused a better resilience to economic shocks. This leads us on to the research question:

> ***How have the social capabilities evolved and possibly affected the five biggest economies in Sub-Saharan Africa since the 1980's?***

Which is based on the hypothesis:

> ***Stronger and higher levels of social capabilities has driven the economic growth and resilience of the countries.***

The framework is based on four social capabilities; *transformation, inclusion, state autonomy* and *accountability* and aims to create a more whole picture of economic development. Focusing on only analysing one part of the economy instead of the interplay and role of several of the institutions can be to limiting and not reflecting the truly complex evolution of an economy. The theoretical framework chosen here, has been applied in similar works previously with some different results. In a case study of the Chilean economy during the last century, von Borries' (2018) find that despite a great evolution of social capabilities they today find themselves in a stagnated economy. The main problem is judged to be the lack of state autonomy and the elites gaining power which lead to a waste of potential income from natural resources as well as some policy failures (von Borries, 2018). Andersson and Andersson (2019) used the social capabilities to compare the growth processes of Côte d'Ivoire and Senegal, finding that though they faced problems at different times, the problems were similar. Most notably the they both struggled with providing economic opportunities to the masses, thereby missing out on potentially substantial economic growth (Andersson & Andersson, 2019). In an analysis focused on how economic resilience is affected by the social capabilities development, von

Borries (2019) finds that the most important ones are related to state autonomy, accountability and social stability. These results are similar to the results of the other two research papers and will be taken into consideration for the analysis of this paper.

There are several things limiting this research such as the physical timeframe as well as the availability of data, which is why this research is limited to the top five countries of the continent, based on comparable GDP per capita. This choice is also based in part on the quote by Abramovitz (1986, p.388) "*a country's potential for rapid growth is strong not when it is backward without qualification, but rather when it is technologically backward but socially advanced*", since the term socially advanced indicates a certain economic level.

As mentioned, this thesis is in part limited by the lack of data for certain chosen indicators and it is dependent on economic data which is often less reliable the older it becomes. The economic performance is represented by the GDP per capita levels in the local currency, two controls are chosen to control for the exports in the countries since they are big exporters of natural resources and a total of thirteen indicators are chosen to represent the social capabilities. The methodology chosen is a panel data study over the five countries, where each capability is studied separately and a representative is chosen for a combined model to try to find which capability might be the most important one. This approach is deepened through graphical analysis of the data as well as a complete econometric model.

1.2   Main Results and Outline of Thesis

The results regarding the indicators chosen are mostly positive with them changing in the desired directions. The strive to find out which capability might be the most important one was unsuccessful as that econometric model did not yield any viable results. However, analysing the complete model and the development of the indicators one by one, it seems impossible to deny that the social capabilities have played an important role in the economic performance of the countries. When analysing the results, it is also suggested that some of the indicators might be mostly affected by the economic performance rather than them causing economic changes. In the case of the short theoretical analysis into the shrinking resilience, it is suggested that the capabilities have played a role in aiding the diminishing levels of economic shrinking.

The rest of this thesis will run as follows, where chapter two goes into previous research on theories regarding catching up, the role on institutions in economic growth and the specific cases of research into Sub-Saharan Africa and it also goes deeper into the theoretical framework of social capabilities which will be used. Chapter three presents the methodological approach to the research and also goes into the data chosen, where it comes from and what potential problems might arise. Chapter four goes into the empirical results of the research, both graphical as well as econometric ones and finishes up with an analysis of the results and a discussion of it implications. Chapter five concludes what the results of the empirical analysis might imply, how the aim of the research has been achieved and what the potential for future research might be.

2 Theory

The theories and research into what causes economic growth is extensive, however the focus on the role of economic shrinking is not as widely recognised. Since this study aims to add to the literature on the subject of economic expansion and contraction a look at the previous research into causes and theories on both growth and shrinking will be examined in this part. Beyond that this section will describe the chosen theoretical framework in further detail.

2.1 Previous Research

The research into what drives economic growth is extensive and the claims for what is the most important driver are many and differ drastically. This research is however focused on social capabilities which in many ways reflect institutions and therefore this look into previous research will focus on the role of institutions in economic growth, of which there are also different types of research. There is research which focus on certain institutions such as schooling, economic institutions or levels of democracy and then there are those who choose a more spanning view of how the state functions and how that affects their economic performance. Beyond the need to look into what has been the driver of economic growth, there is also a need for a closer look into how the global growth has developed over the years; who have been catching up and why have they managed to do that.

When looking into the possibility of countries being able to catch up with the economic leaders, one inevitably comes across Gerschenkron (1962). He proposed the idea that those who have fallen behind are not lost causes as they should be able to quickly skip ahead in innovation and industrialization thanks to copying the technology of the leaders. Moving on to a closer look at those who have researched the convergence and divergence of economies worldwide, leads to Pritchett (1997), who is an inspiration for several other authors mentioned in this literature review. Starting the analysis all the way back in 1870, it is easy to distinguish two groups of countries diverging in economic performance where the European countries plus its offshoots and Japan pulled away drastically from the rest of the world, at least until the East Asian growth

miracle (Maddison, 1995; Pritchett, 1997). One of Pritchett's (1997) main observations of the most successful economic growers is the stability of their growth over several decades, which was not observed in economic performances before this time. Pritchett (1997) concludes that even though there have been cases of countries who have actually managed to catch up, these instances have been rare with the chance of late catch up being very low. Instead there are many more examples of countries stagnating and falling further behind due to low levels of growth and instances of shrinking. According to Broadberry and Wallis (2017), understanding the frequency and depth of economic shrinking is just as important as research into what causes economic growth. They find that when growth rates have been high in a country so has the frequency of economic shrinking, however when economic growth settles at a lower positive level, the instances of economic shrinking also diminish. They conclude that achieving the "final stage" of modern economic growth means that a country manages to reach a point where they are able to avoid plateaus, plains as well as mountains (Broadberry & Wallis, 2017). Reaching this level however, includes creating stability within the agricultural production progress, technological improvement and total factor productivity growth, a stabilisation and reduction in population growth and lastly managing to avoid civil unrest and conflicts which is a not so simple task (Broadberry & Wallis, 2017).

With these ideas in mind, Olarinde and Yahaya (2018) investigated the conditional convergence of the Sub-Saharan region from 1990 to 2014. Using a panel model they find that countries only converge when certain conditions are present, claiming that economic growth is not enough for the poorest countries to converge with the richest ones. They conclude that institutions must not be absolutist or extractive for there to be any chance of convergence and there is also a need for the state to promote high quality human capital and resources (Olarinde & Yahaya, 2018). However, with the Gerschenkron view of catching up through substitution into rapid industrialization, Austin (2016) asks if perhaps Sub-Saharan Africa is too late to be able to catch up. As the industrialized countries have a diminishing need of cheap labour from developing countries due to automated processes and cheap immigrant labour in their own countries, one of the major substitution factors for these developing countries has been weakened. In combination with a potential weakness in adapting and adopting new technology in an efficient way and a struggle to achieve large, widespread manufacturing, it seems the potential for catch up might be slipping through their fingers (Austin, 2016). There does seem to exist reason for hope though as India has moved into "late industrialization", which indicates that there is still a chance for Sub-Saharan Africa to manage to do the same (Austin, 2016). This more positive

note is echoed by Thorbecke and Ouyang (2016), who claim that since the start of the millennia the Sub-Sahara African region is showing signs indicative of a catching up process. Amongst such signs are increasing labour productivity, more inclusive growth and a shift towards a higher quality of governance (Thorbecke & Ouyang, 2016).

Moving on from the theories on how catching up can be achieved, focus is now shifted onto research into what causes economic growth in the first place, with special attention given to research into the role of institutions. According to some, economic growth cannot be properly analysed if institutions are left out of the equation as they play much to vital a role in the process (Acemoglu & Robinson, 2015). Echoing this sentiment, with a focus on the role of income inequality reduction and economic complexity, Hartmann et al. (2017) find that institutions need to be of good quality to ensure economic growth, especially if that growth is to be inclusive. They find that similarly to how diverse exports is likely to drive technological development it is also central in driving incomes to become more equal (Hartmann et al., 2017; Hausmann, Hwang & Rodrik, 2005). Looking more specifically at the African continent it seems that the quality, structure and motive of the institutions play a massive part in the economic performance. Looking at the results of the colonial impact on the continent, Acemoglu, Johnson and Robinson (2000) find that places which were rich in resources but offered hostile living environments still suffer economically due to extractive and abusive institutions set up decades and centuries ago. Furthermore, these authors go on to argue that this pattern was repeated all over the globe. Civilizations which we know were once prosperous, such as Incas and Aztecs, are today amongst the developing ones due to institutions setup to extract wealth from these areas and move it to what is today the industrialized countries, indicating the potentially destructive force which exist with institutions (Acemoglu, Johnson & Robinson, 2000; 2002; 2005). However, institutions are also able to maintain peace, as was found to be most important to create sustained growth (Rodrik ,1999). According to Rodrik's (1999) research, countries which suffered from the worst economic performances were the ones who were struggling to keep civil unrest and social conflict under control due to low quality institutions. In the case of Africa, this is likely to be of big importance since the continent has faced high levels of civil unrest ever since the European nations sat down to divide the country between them in the late 1800's (Griffiths, 1986). This divide did not only lump together people of different ethnic groups but also created countries of strange shapes which made it harder for everyday life to continue for large groups of the population (Griffiths, 1986).

Others who have researched the role of institutions find that the effects and the conclusions might be overstated. Instead, according to Easterly, Kremer, Pritchett and Summers (1993), the majority of effects on the economy comes from shocks to a country's terms of trade and the effect of institutions is rather unclear. They are not denying that institutions have a certain amount of effect but they choose to be careful about drawing conclusions on the strength of that effect and rather emphasize that most economic change is simply due to random effects (Easterly, Kremer, Pritchett & Summers, 1993). Basu and McLeod (1992) however, find that the terms of trade in most developing economies follow cyclical trends and rather the changes in the long term growth are much more crucial to the GDP levels. These changes in long term growth however might occur due to shocks to the terms of trade which permanently alters the output levels.

Moving on to some of the theories encompassing the bigger picture of economic development we find North, Wallis and Weingast (2009) who strongly argue that it is not possible to evaluate economic growth without institutions included. Depending on how the institutions work, a nation either functions as either a limited or an open access order and this affects how well social unrest is handled and thereby economic growth. The limited access order has been the natural for most nations for the most part of civilized society and means that control is kept through creating enticements for the elites to keep the power structure as it is so as to not lose benefits. An open access order is instead based on impersonal rules, equal opportunity and competition for all which incites everyone to work for a democratic rule so as to not be shut out of the chance of economic gain (North, Wallis & Weingast, 2009). Beyond this model, the flying-geese model of East Asia also offers a more encompassing development model. This idea relies on one leading country moving up one step of the traditional ladder of development, transitioning from agriculture to low-skilled manufacturing and then higher skilled manufacturing, each time leaving a hole for the following countries to fill (Lin, 2011). This model does however imply that the African countries will follow the traditional idea of economic development, which they might not be able to do, due to reasons out of their control.

Lastly it is important to account for the world that these Sub-Sahara African countries are facing in their struggle to create economic growth. Thorbecke and Ouyang (2016), Rodrik (2014) as well as Austin (2016) bring up the fact that the world today is very different compared to what it looked like when the East Asian miracle growth took place. WTO rules and two major players, China and India have entered the global market in a more forceful way, which might make it harder for the African countries to be able to be a part of the labour intensive

manufacturing which has been the historically successful way towards economic growth and catching up. We have not really seen any instances where countries have managed to grow quickly and sustainably without being dependent on manufacturing however that does not mean it is impossible (Rodrik, 2014). Ghani and O'Connell (2014) argue that it is possible for the service sector to produce enough economic growth and that it is also the more sustainable way to go forward since services are usually greener than labour intensive manufacturing. This positive sentiment is echoed by Rodrik (2014) who believes that Africa has the ability to create sustained growth, although not at the same high level which has been observed during the last decade and a half.

2.2   Theoretical Approach

Previous research into economic performance has, as previously stated, mainly focused on how to achieve growth rather than focusing on how to resist economic slumps and shrinking. The framework chosen for this analysis argues for the need of a country to achieve a structure which is impersonal and works for all people to be able to create and drive sustained economic growth as well as resilience (Andersson & Palacio, 2017). This theoretical framework describes and suggests estimates of social capabilities of a country and how added resilience to economic shrinking might then lead to making catching up to the economic front runners possible. It builds on the idea posed by Abramovitz (1986), that a country must be socially advanced but technologically backwards to be able to catch up, and takes this idea a step further by actually offering up a way to define and thereby estimate how socially advanced a country is. The framework was first proposed by Andersson and Palacio (2017) and later expanded on by Andersson (2018) and is composed of four different social capability concepts; *transformation, inclusion, state autonomy* and *state accountability*.

The following sections will go further into what these capability concepts mean and how they might be estimated and measured as it is outlined in Andersson and Palacio (2017), Andersson (2018) as well as other research.

2.2.1 Transformation

The transformation concept of the framework focuses on the evolution of increased productivity within initially agriculture which then should spread to other parts of the economy. A country's level of structural transformation has long been used to research economic growth and historically the majority of the now wealthy countries have followed a similar path of structural transformation (Andersson & Axelsson, 2016). Beyond the increase in productivity, the main benefit coming from a structural transformation is the creation of linkages between sectors in the economy, making the involved sectors stronger. The structural transformation is characterized by agriculture becoming more productive and a lesser need of labour. The spare labour should then be picked up by other sectors of the economy, usually manufacturing initially and as a country graduates to higher income levels the service sector takes over as the main employer (Ghani & O'Donnell, 2014). Beyond the transformation of the most important employment sectors, the savings of the country should also go through a transformation. When the national income rises, the way money is distributed should transform and new financial agents should emerge to aid in this process (Gerschenkron, 1962).

2.2.2 Inclusion

At the core of the inclusion dimension is pro-poor growth, as most developing countries today are facing high levels of inequality (Andersson & Palacio, 2016). This means that the productive segments and technologies becomes available to those who were previously left out of access. These factors can take the shape of directly redistributing funds through various programmes, access to financial credit, as well as the openness of the economy and the access to education. Through education, changes of employment become easier and thereby increases the chances of wage gains and historically, levels of infant mortality drop when education rates increase (Schultz, 1961). Indicators for these factors could therefore comprise of looking at poverty rates, levels of enrolment and infant mortality rates. It is also important to keep in mind that there might be a need to compare relative poverty levels between bottom and top percentages and not only use a set poverty line.

2.2.3 Autonomy

According to the authors, autonomy is defined as how able the state is to keep those who have a vested interest, out of the decision making process (Andersson & Palacio, 2016). States with high levels of autonomy have developed independent institutions which work without problematic influence where they have similar structures with central banks, bureaucracy and trade. Taxation of the non-poor is not common in states with low autonomy, as rich actors are able to influence policies to protect their own wealth and taxation levels can therefore be used as an indicator for state autonomy. Policies to redistribute income might also be blocked by richer parties and so looking at public wealth levels might be of interest to estimate this capability. A measure of a successful central bank can be found in the stability of the inflation levels and their ability to reach their goals. Most developed nations have an inflations goal of somewhere around two percent, which is emulated by many developing countries as well and the ability to reach that goal is a valuable one to create economic stability and possibly resilience.

2.2.4 Accountability

Lastly, the level of accountability of the state should be evaluated, as even if the state is autonomous it might not be held properly accountable and therefore might manage to waste and abuse its power and assets as well as continue to promote inequality (Andersson & Palacio, 2017; Palacio Chaverra, 2018). A state which is held accountable should be able to provide a high quality of governance and provide quality public goods. The potential indicators of good levels of accountability include infrastructure quality and investment, comparisons between how much is spent on the older versus the younger part of the population, education and health expenditures as well as how well the state adapts spending to economic cycles.

3 Methodology and Data

The following chapter will detail the methodological approach used for this research as well as how the capabilities are estimated, where data has been collected from and what the strengths and weaknesses are for them.

3.1 Methodological Approach

The goal for this research is to achieve a deeper understanding of how the social capabilities have shaped the economic performance of the studied countries. The chosen framework aims to be more inclusive and reflective of the complexity of economic growth and what may be driving forces and hindrances.

The approach is quantitative, making use of graphical representation and an analytical narrative, reminiscent of the country narratives described by Rodrik (2003) but on a broader perspective encompassing the five countries selected. With a country narrative it is possible to fill in some parts in the economic performance of a certain country and also gaps in economic theory. In combination with an econometric model this research aims to try to estimate which capabilities might have played a bigger part in accumulating economic growth. These results will be of interest to compare to similar research which has utilized the same theoretical framework. Andersson and Andersson (2019) used it as a comparison of economic growth between Senegal and Côte d'Ivoire, and von Borries (2018; 2019) utilized it for a case study of Chile as well as a study into the change in economic resilience of Latin America and Palacio Chaverra (2018) used the framework to summarize income convergence of a chosen number of developing countries. The results found indicate that state autonomy and accountability are more important capabilities in the growth and resilience of an economy (Andersson & Andersson, 2019; von Borries, 2018; 2019). This is motivated to be especially important in a natural resources rich nation as it prevents rent seeking behaviour surrounding these resources, since this behaviour is never the most efficient one.

For the econometric model, a panel data approach will be used with a hope of capturing both common and the individual effect in as correct a manner as possible. The dependent variable will be GDP per capita in the constant local currency so at to best represent the actual growth and not risk losing or causing variation due to currency exchange. The equation below shows the model, where Y denotes the economic measurement, SC the panel of social capabilities and X represents the control variables included.

$$Y_{it} = \propto + \beta_1 SC_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

A country fixed effect will be used as an attempt to correct for omitted variables as this makes up for the individual variation of the countries. The different indicators for each capability will be tested against each other to find the best representation before a combined model including one indicator for each capability will be included.

3.2 Data Collection

The parameters set for this research, the top five continental nations based on current GDP per capita in US dollars (The World Bank, 2020a), leaves us with the countries Botswana, Equatorial Guinea, Gabon, Namibia and South Africa. There are several different types of data needed for the analysis of this research, which will be collected from sources such as the World Bank and The International Monetary Fund. The capabilities of the framework have no set way of estimation, however there are several of these capabilities which have been estimated in other research in repeating ways. Since this study finds its inspiration in research which has used the same theoretical framework, the definitions of the capabilities will be the same as those used in the von Borries (2019) analysis, however their sources might differ depending on availability of data since the regions differ.

3.2.1 Economic Measurements

The economic measurements are all collected from The World Bank's Development Indicators partly to avoid differences in calculations which might occur when mixing sources and also since The World Bank can be assumed to be a trusted supplier of international data. For the analysis into economic shrinking and the econometric model, GDP per capita in the local currency (constant LCU) will be used. This measurement better reflects what the situation is

for the nations as a whole rather than a look at the total GDP and it is also readily available online with a high level of credibility. To be able to get a comparative overview of the performances of the countries, the GDP per capita in constant US dollars will be used for certain parts of the analysis. There is plenty of research which concludes that parts of economic growth is often due to chance and luck and controls are needed to compensate for this factor (Easterly et al., 1993). As Sub-Saharan Africa is a resource rich area, the natural resource rents will be used as a one of the controls as well as the terms of trade since these have been known to be economic drivers for countries on the continent and it is expected that price fluctuation should affect economic growth performances.

Table 3.1 List of Indicators for Economic Measurements and Controls

Indicator	Source
GDP per capita (constant LCU)	The World Bank
GDP per capita (constant 2010 US$)	The World Bank
Net barter terms of trade	The World Bank
Natural resources rents (% of GDP)	The World Bank

3.2.2   Transformation

Talking about structural transformation in a country is most often expressed as observing a productivity growth within agriculture which then manifests as the labour share diminishing at the same time as its value added to GDP also lessens. These measurements can be found on The World Bank for all countries in this study, however there are some who do not have numbers for all years studied. Beyond the levels of agricultural transformation, the level of quality and diversification of the exports can be used as an indicator for transformation within the economy as Hausmann, Hwang and Rodrik (2005) found that what types of goods you export matters for your economic growth. Through a more diverse basket of export goods, the risk of severe economic repercussions in the case of shocks lessen since they are no longer dependent on a few certain industries. The complexity of the exported goods also leads us on to the complexity of the economy as a whole, where the number of links between sectors also helps the economy withstand severe reactions in the case of external chocks.

Table 3.2 List of Indicators for Transformation

Indicator	Source
Agricultural Share of GDP	The World Bank
Agricultural Share of Employment	The World Bank
Economic Complexity Index	The Observatory of Economic Complexity
Export Diversification Index	International Monetary Fund
Export Quality Index	International Monetary Fund

3.2.3   Inclusion

An inclusive economy in this sense of the word indicates that the economic growth and wealth is being spread across the population, benefiting the poor just as much as the rich. Not only the economic growth affects the inclusion, but also redistributive efforts taken by the state. For this purpose the Gini coefficient will be used, where a coefficient closer to zero means that the wealth is spread more evenly across the populace. Beyond this coefficient, the efforts taken by the state to improve the situation of the vulnerable can be estimated by the level of unemployment. A high level of unemployment suggests that the state has failed to create opportunity for official employment, it does not mean that a vast number people are not working in some way. This is a problem since unofficial employment rarely entails pension plans or healthcare benefits. The relevance of this question can be easily observed in developed countries as well as the question of unemployment is always a highly important one around election time.

Table 3.3 List of Indicators for Inclusion

Indicator	Source
Gini Coefficient	Solt, (2019)
Unemployment Levels	The World Bank

3.2.4 Autonomy

A well-functioning state should not be influenced by private actors when it comes to policy creation since this will only benefit those who are powerful enough to create leverage in their favour. When the state does not manage to withstand this pressure, it is often displayed as beneficial tax laws, therefore using the tax revenue as a share of GDP is one useful indicator. Furthermore, a successful state should be able to create independent branches of government and the economy, more specifically an independent central bank. Amongst the developed countries in the world, the central banks generally set the inflation goal to two percent, so a closer look at the independence of the central banks as well as the level of inflation become two other useful indicators for investigating the autonomy of the state.

Table 3.4 List of Indicators for State Autonomy

Indicator	Source
Inflation Rate	The World Bank
Central Bank Independence Index	Garriga, (2016)
Tax Revenue	The World Bank

3.2.5 Accountability

The accountability is defined as how well the state manages to provide public goods for their citizens and fulfilling the role of government. The first indicator will be the much used level of child mortality as it is often used as a measurement for how well developed a country is and it is lowered quickly when access to hospitals and proper medical knowledge increases. As an indicator for infrastructure, the access to electricity will be used. Widespread access to electricity makes it easier for local enterprises to work and drive the economy, increases safety if street lighting is provided and it also increases the chance of access to internet which eases education. Lastly the government expenditure on education certainly reflects the states attitude towards its population as a steady access to education is a major contributor to building up human capital (Goldin, 1998; Schultz, 1961). Beyond the human capital aspect, access to education increases the life quality in other ways such as increasing the ability to family plan, numeracy makes financial transactions easier and literacy makes it easier to understand when one is being cheated in a transaction.

Table 3.5 List of Indicators for State Accountability

Indicator	Source
Child Mortality Rate	The World Bank
Access to Electricity	The World Bank
Gov. Expenditure in Education	The World Bank

3.3   Descriptive Data Analysis

Looking at the descriptive statistics of the dataset, it becomes obvious that for some of the variables there is a lack of data. One such example is the Economic Complexity Index, where there exists no data for Equatorial Guinea due to the population being to small to warrant a complexity index being created during the studied period (The Observatory of Economic Complexity, 2020). Beyond that the access to data on government expenditures on education is also low, as well as a few other variables. The panel dataset is quite unbalanced, which might lead to some indicators not being properly represented in the estimates. What we must think about though, is what is the reason for the dataset being so unbalanced, is there a systemic reason for this or is the reason random? The reason in this case is generally random and often times the lack of data for a specific indicator is similar between the countries. This should however be taken into consideration in the analysis especially as some variables show some possible outliers, for example the child mortality and the inflation rate.

Table 3.6 Descriptive Statistics

Indicator	N	Mean	Median	Min	Max
GDP pc LCU	180	N/A	N/A	N/A	N/A
Natural Resource Rents	176	15,16	6,26	0,37	84,24
Net barter Terms of Trade	175	118,10	102,94	31,60	357,58
Agriculture, share of GDP	154	5,46	4,97	0,89	12,70
Employment in Agriculture	125	30,27	30,74	4,60	62,03
Economic Complexity Index	100	-0,61	-0,63	-1,63	0,30
Export Diversification Index	135	4,33	5,07	1,78	6,10
Export Quality Index	133	0,72	0,74	0,37	1,03
Gini Index	135	0,67	0,64	0,54	0,78
Unemployment Level	125	18,56	19,14	6,33	33,47
Inflation Rate	151	6,64	6,55	-17,64	36,12
Tax Revenue	93	22,87	24,29	7,02	33,65
Central Bank Index	149	0,43	0,50	0,22	0,52
Child Mortality Rate	178	86,87	76,65	37,70	200,80
Electricity Access	90	55,32	53,31	10,10	92,39
Gov. Expenditure on Education	56	5,47	5,55	2,19	10,68

3.4   Limitations

There are certain things which are inevitable weaknesses in any research model, which is of course true for this one as well. The basis of the analysis is made up of economic data going as far back as four decades and when it comes to economic data, the older it is the more unreliable it becomes. Since this research is focused on one of the areas of the world which has fallen the furthest behind the developing ones, a lack of data for certain variables is inevitable which is made obvious by Table 3.6. Not only is the data more unreliable further back in time but the

access is also worse, especially before 1990. This does mean that there will likely exist an omitted variable bias for any model created using this data.

Furthermore, it is likely that endogeneity issues exist in this research and it seems illogical to argue to anything other as several of the variables have been linked to economic growth performances in previous research. The alternative to dealing with this issue would be to offer some sort of instrument variable alternative, however, finding instruments for all chosen indicators is not a sustainable option within the limitations of this research. This is made obvious in the correlation matrix in appendix A, where several of the variables show high levels of correlation with the GDP per capita as well as with each other. Since there is no obvious way of dealing with this issue, it will have to be considered in the analysis and the final conclusions.

Finally, one aspect which might be of importance, especially when looking at how well a country manages to create a system which work inclusively, is the fractured background of Africa. Due to the way Africa was divided into countries from a conference room in Berlin, many tribes were separated into different countries and also forced to work with rivalling tribes since they were now citizens of the same nation. This did not create a bases suitable for a sustainable and peaceful society in many cases, however to start looking into this is to big of a question to include in this analysis. For that reason, measurements on ethnic fracturing will not be included in this research.

4 Empirical Analysis

The following chapter will present the empirical results for each social capability based on the chosen indicators. An analysis into the roles and effects of the capabilities on economic performance will follow as well as a summation on what these results might mean for the area of Sub-Saharan Africa.

4.1 Results

The chosen framework is based on the idea that a more impersonal approach to governance should yield more stable economic growth as well as drive it forward to some degree. With these ideas in mind as well as the previous results of Andersson and Andersson (2019) as well as von Borries (2018; 2019) is seems logical to assume that the capabilities representing autonomy and accountability should play an extra important role in the results of economic performance.

For each social capability, the chosen indicators are analysed through graphical representation and also through the econometric model previously described. There are six different econometric models presented for each capability, where the first and second are regular OLS regressions, the third and fourth are panel regressions with fixed effects and the fifth and sixth are fixed panel regressions with robust standard errors. From these regressions it will be decided which indicator has the most effect on the GDP per capita growth. The chosen ones will be compiled into one final model for determining which potential effect each capability has on economic growth and if one capability might be more important than another. As for the shrinking resilience, the frequency of shrinking years for each decade is presented and it will be theorized on how the indicators might affect the resilience to shrinking.

4.1.1 Transformation

Looking at the estimates regarding the transformation aspect of the social capabilities, we would expect the level of value added to GDP to lower over time. This shift indicates that the economy is moving from the agriculture sector driving the economy, by becoming more productive and instead other sectors become the economic engine. The most extreme transformation can be observed in the case of Botswana, having moved from agriculture contributing to over 12 percent of the annual GDP to adding barely two percent at the end of the period. This trend is generally similar in the other countries observed except for Namibia where the changes instead have been much more up and down. Peaking in 2000, the trend has since then been on a downwards trajectory and generally the countries show a convergence in their transformational process. This indicates that the state is working for technological implementation and development to increase productivity.
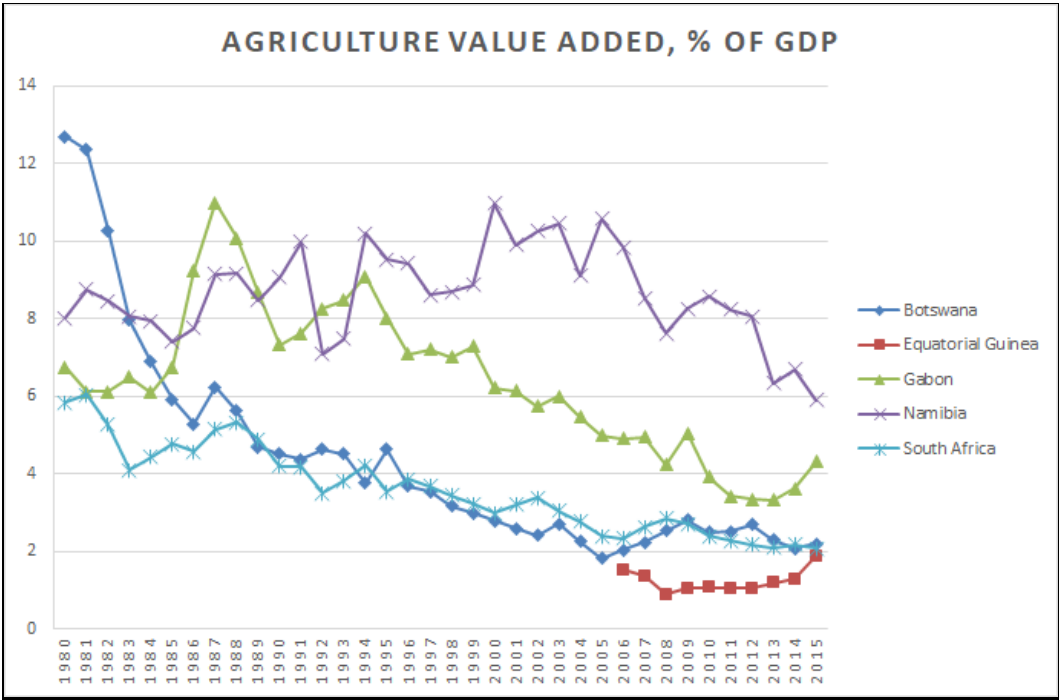

Figure 4.1 Agriculture, Value Added to GDP
Source: constructed by author, from World Bank data

Similarly to the value added to GDP, we expect that the level of employment in agriculture should drop in time with the value added, since the technological progress shifts towards more workers being replaced by machines and smaller farms are often consolidated into larger ones. In this case it is Botswana which shows a divergence from the trend with an increasing share of employment in agriculture during the 2000's while the rest show the expected downwards trends. This could however simply be due to an issue of data access since these are numbers

calculated by the International Labour Organization rather than the nationally calculated numbers since those were few. It might also be due to a change in the definition of what counts as being unemployed or more accurate measurement methods coming into play. These two agriculture based indicators point towards the studied countries having been able to move in the desired direction and moving away from agriculture driving the economy is likely an important step in moving away from frequent shrinking episodes since it makes them less vulnerable to changes in the world price.
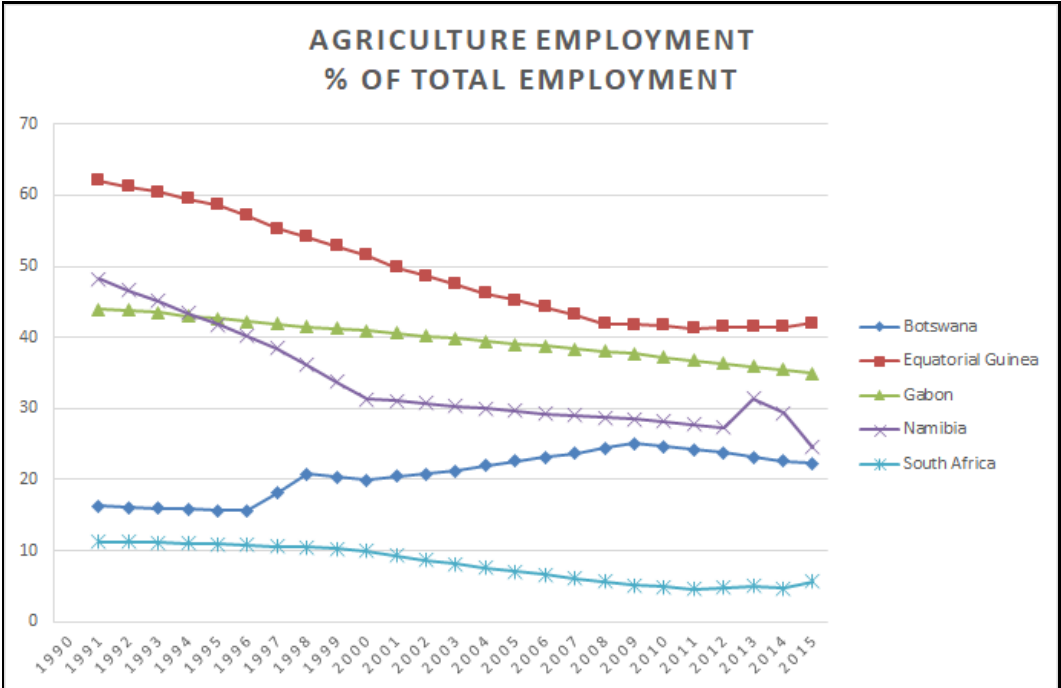

Figure 4.2 Employment in Agriculture
Source: constructed by author, from World Bank data

Moving on to the economic complexity and exports part of the economy the access to data becomes a bit sketchy for several countries. Looking at the actual data available, the trends for all countries is upwards sloping, even though the fluctuations of the ranking is very big for several of the countries, especially Botswana. With a more complex economy, the effect from external shocks to the economy should be lessened as the dependency on any one specific sector is lower. The difference between the countries is rather large, with South Africa being the clear leader in this case and Gabon being quite far behind. Interestingly, three of the countries seem to have benefitted from the 2008-09 financial crisis, likely due to countries who were more intertwined with and dependent on the global financial market losing ground during these years.
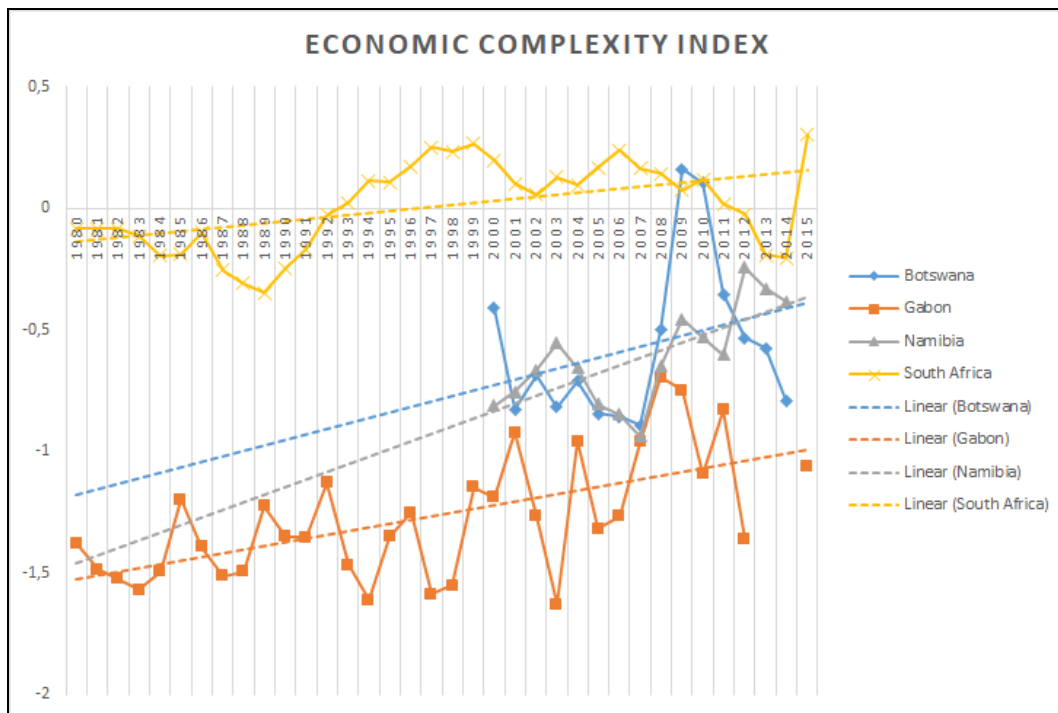
Figure 4.3 Economic Complexity Index
Source: constructed by author, from Observatory of Economic Complexity data

Note: Equatorial Guinea is excluded from this graph, as they had too small of a population to be included in the Economic Complexity Index.

Moving on to the diversification and quality of the exports there is not much change over time for most of the countries in either category. The biggest change in diversification is seen in Botswana in the years leading up to and bottoming out at the financial crisis of 2009. In the quality of exports, Equatorial Guinea is the only country showing any real change, unfortunately not in the direction we would hope as their quality index has dropped from just over 0,9 to below 0,6. This suggests that the goods exported are not the ones gaining from the technological leaps assumed from analysing the graphs of agricultural transformation. Part of the reason for this is most likely due to the majority of the exports from these countries being made up of crude oil, precious metals, gems and minerals, where the need for technological drive is not as big as when more complex products are being produced and exported. In the case of the diversification and quality of their exports it would likely be beneficial for these nations to move further in the development of their natural resources to be able to sell both crude and refined products. As has been mentioned earlier it would probably be good for the robustness of the economy if their exports diversified to better resist external shocks and make it less vulnerable to global market price changes.

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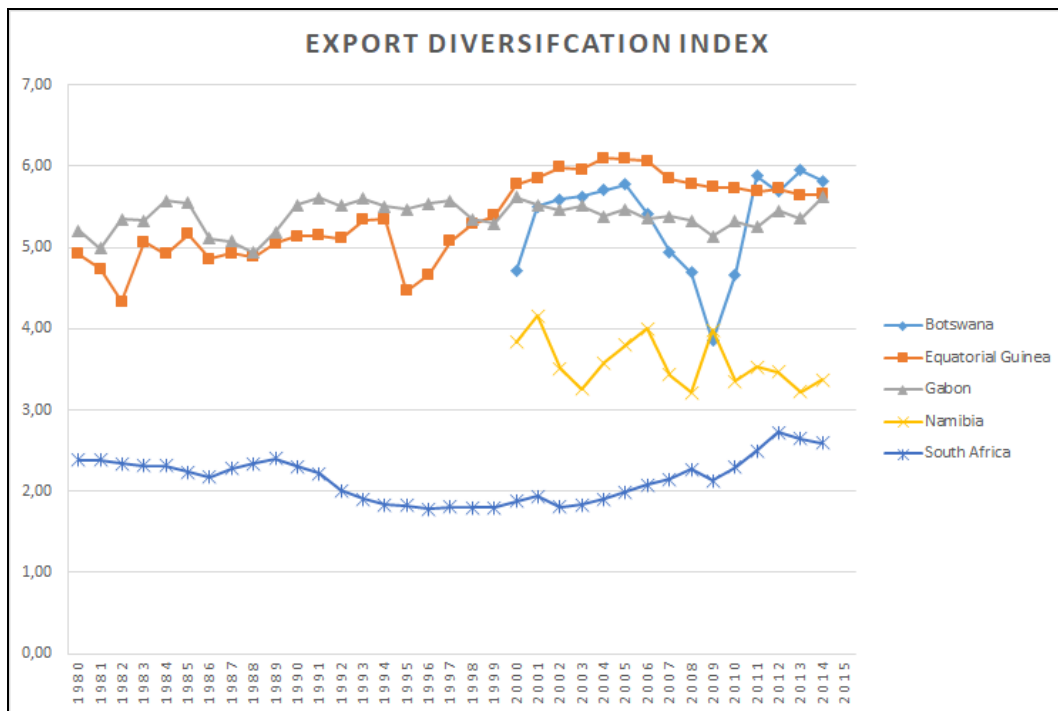
Figure 4.4 Export Diversification Index
Source: constructed by author, from IMF data
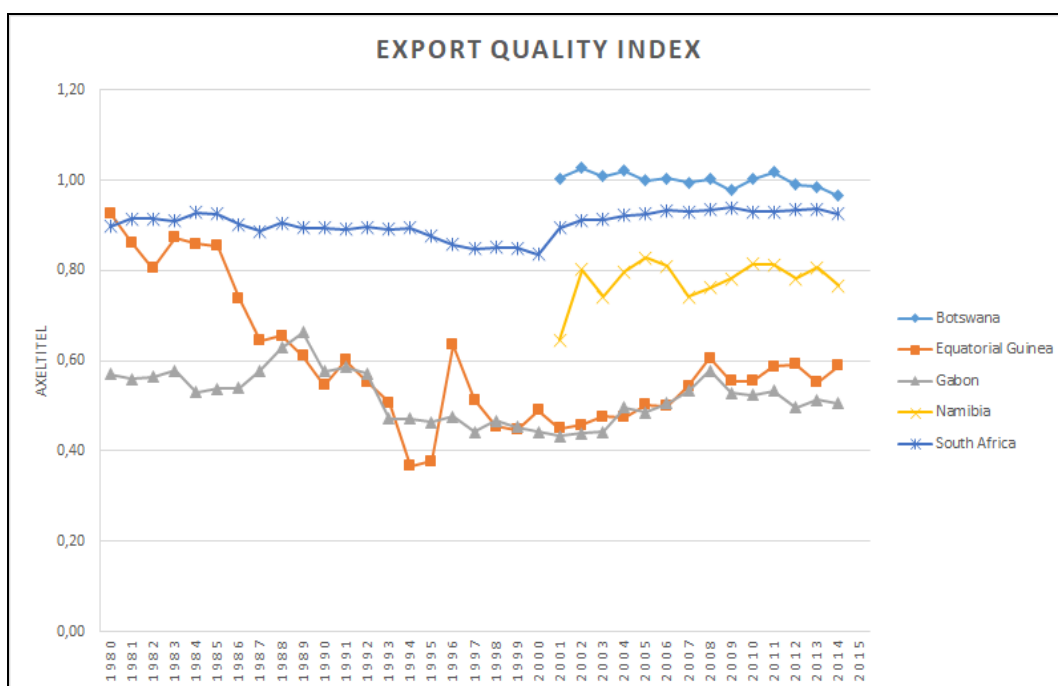
Figure 4.5 Export Quality Index
Source: constructed by author, from IMF data

Looking at the regressions over the indicators effect on the GDP per capita, the results differ quite a lot between the models estimated. For all models, the share of natural resources rent has a significant role in the economic growth which is to be expected, based on what we know of the studied countries. The OLS estimates find that both agricultural share of GDP as well as the export quality are significant indicators in the GDP per capita growth. However, the estimates

change rather drastically when looking at the panel regressions, where the only significant indicator is employment in agriculture. When using robust standard errors instead, none of the indicators are significant, though the employment levels are the ones which are still closest to being significant on any level. Based on this, the employment levels will be chosen as an indicator for transformation.

Table 4.1 Estimating Indicators for Transformation

	(1)	(2)	(3)	(4)	(5)	(6)
			Log GDP pc LCU			
Constant	11.02***	8.116***	12.64***	13.17***	12.64***	13.17***
	(0.384)	(1.189)	(0.465)	(0.713)	(0.689)	(0.830)
log Agriculture, share of GDP	**-0.966*****	**-0.456***	0.124	0.0838	0.124	0.0838
	(0.210)	**(0.194)**	(0.0796)	(0.0810)	(0.226)	(0.215)
log Employment in Agriculture	-0.251	-0.109	**-0.350****	**-0.260****	-0.350	-0.260
	(0.239)	(0.194)	**(0.107)**	**(0.0935)**	(0.160)	(0.118)
Economic Complexity Index	0.0476	-0.0758	0.0156	-0.0181	0.0156	-0.0181
	(0.298)	(0.239)	(0.0677)	(0.0591)	(0.105)	(0.0972)
log Export Diversification Index	0.663	0.495	0.0674	0.198	0.0674	0.198
	(0.426)	(0.341)	(0.197)	(0.172)	(0.285)	(0.270)
log Export Quality Index	**-7.425*****	**-5.139*****	-0.0852	0.187	-0.0852	0.187
	(0.344)	**(0.458)**	(0.227)	(0.239)	(0.202)	(0.102)
log Natural Resource Rents		**0.436*****		**0.106*****		**0.106***
		(0.0812)		**(0.0222)**		**(0.0217)**
log Net Terms of Trade		0.366		**-0.220***		-0.220
		(0.242)		**(0.0993)**		(0.119)
Observations	74	74	74	74	74	74
R^2	0.944	0.965	0.253	0.468	0.253	0.468

Standard errors in parentheses, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

4.1.2   Inclusion

According to Kuznets (1955), when income per capita rises, so does inequality levels until a certain level is met, human capital expands, a welfare state is instated and a certain level of democratization is achieved. When it comes to the inequality data of the chosen countries, most countries show little change. Those who are showing some change are Botswana and South Africa, where we might be seeing the Kuznets peak in the case of Botswana, but a clear rising

trend in South Africa. During the studied period, South Africa has gone through a turbulent political time which might be reflected in the steady rise of their Gini index, as it is difficult to work for inclusive policies in turbulent times.
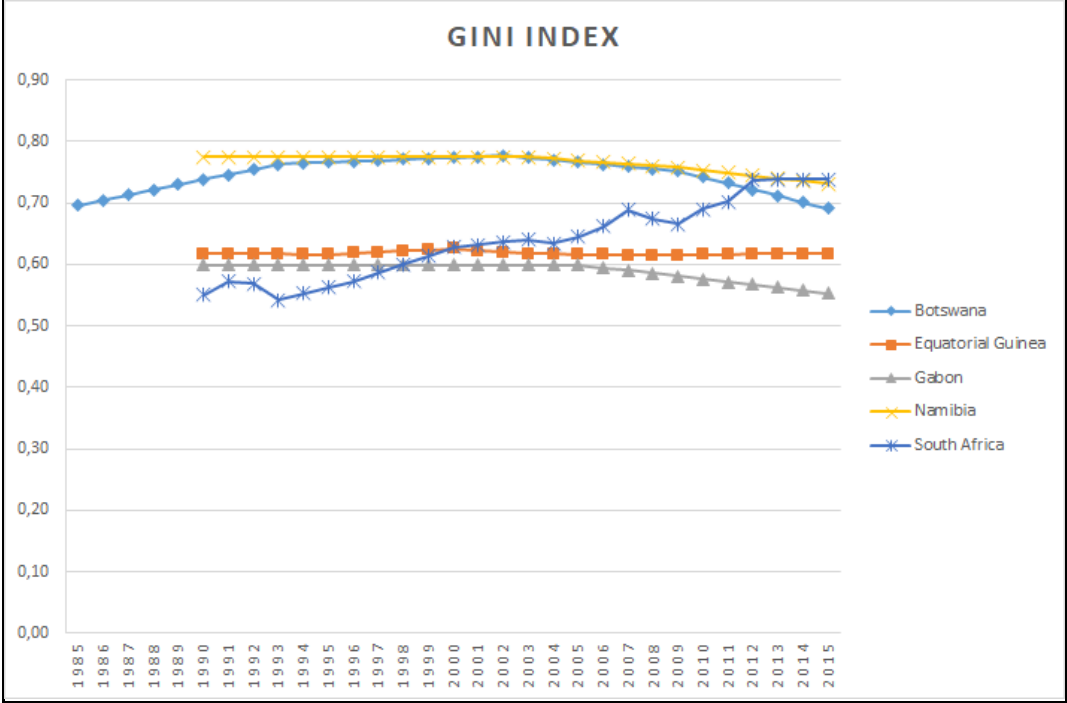

Figure 4.6 Gini Index
Source: constructed by author, from Solt, (2019) data

In the case of the unemployment levels, only Equatorial Guinea seem to be able to create official employment at an high and inclusive level, with unemployment never rising above ten percent during the studied period. Levels for the rest for the countries are very high in comparison with the levels which developed countries are usually striving for and they are almost converging at a 20 percent level. It is important to remember that these high levels do not automatically mean that the majority of the unemployed population does not work in these countries, since the level of unofficial employment is usually high in developing countries and not part of this statistics. It does however indicate that the state is unable to provide and promote opportunities for creating official employment which indicates that the state is failing in working towards inclusivity.
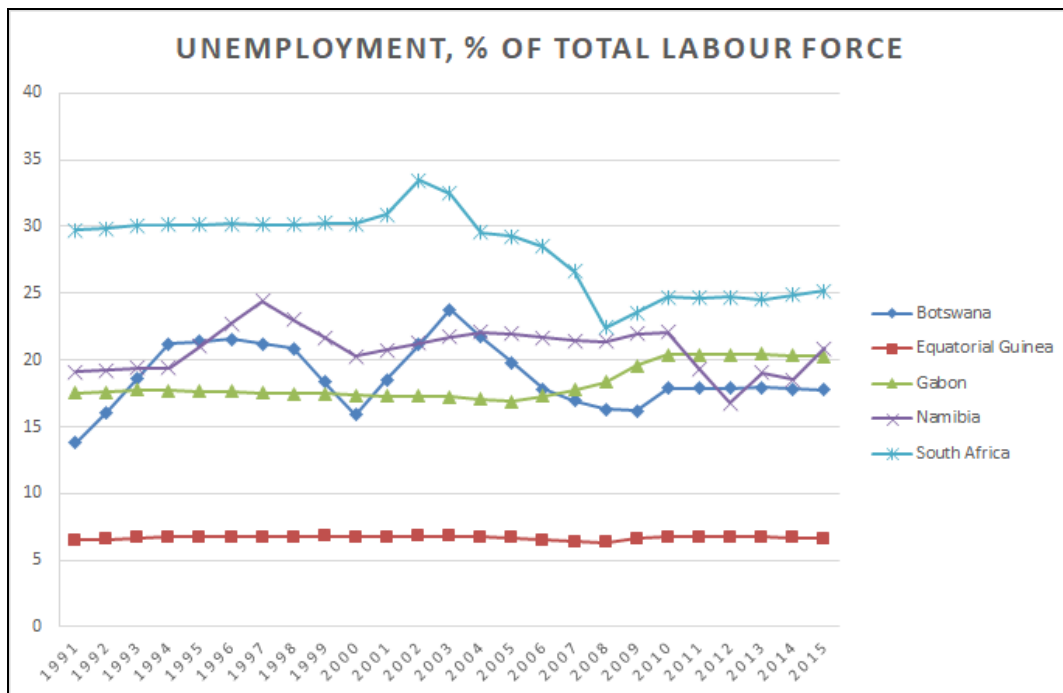
Figure 4.7 Unemployment Levels
Source: constructed by author, from World Bank data

When evaluating the indicators via regression the results are unfortunately not particularly helpful. In the OLS regressions, all of the indicators are significant, this however changes when using the panel regression approach which makes it more difficult to determine which estimate will be used for the combined model. For this reason, a look at the estimates chosen by von Borries (2019) helps motivate the decision, where the Gini index is chosen to represent inclusion in the complete model. Once again, one of the controls is significant, this time the terms of trade, which continues to indicate how much these countries depend on their natural resources and export opportunities.

Table 4.2 Estimating Indicators for Inclusion

	(1)	(2)	(3)	(4)	(5)	(6)
	log GDP pc LCU					
Constant	13.64***	6.192***	14.01***	7.866***	14.01***	7.866
	(0.761)	(0.873)	(1.720)	(1.069)	(0,483)	(3.446)
log Gini	**-11.52*****	**-5.419*****	-0.0265	-0.475	-0.0265	-0.475
	(0.878)	**(1.005)**	(1.206)	(0.649)	(0,770)	(0.626)
log Unemployment	**-2.150*****	**-1.630*****	-0.640	-0.716	-0.640	-0.716
	(0.207)	**(0.212)**	(0.645)	(0.369)	(0.127)	(0.723)
log Natural Resource Rents		**0.546*****		0.0510		0.0510
		(0.0993)		(0.0528)		(0.097)
log Net Terms of Trade		**1.570*****		**1.279*****		**1.279***
		(0.183)		**(0.0775)**		**(0.310)**
Observations	125	121	125	121	125	121
R^2	0.753	0.879	0.009	0.719	0.009	0.719

Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.1.3 Autonomy

Developed countries generally try to keep their inflation at around two percent to achieve a stable price level and economic flow in the country and managing to achieve this is a sign of a functioning independent central bank (CBN, 2020). The historical inflation rates have clearly been fluctuating for the studied countries however, we can clearly see that the countries have converged to similar inflation level under five percent in the last few years. This indicates that the banks have managed to run their services with their goal in mind without having to bow to the will of someone with their own agenda.
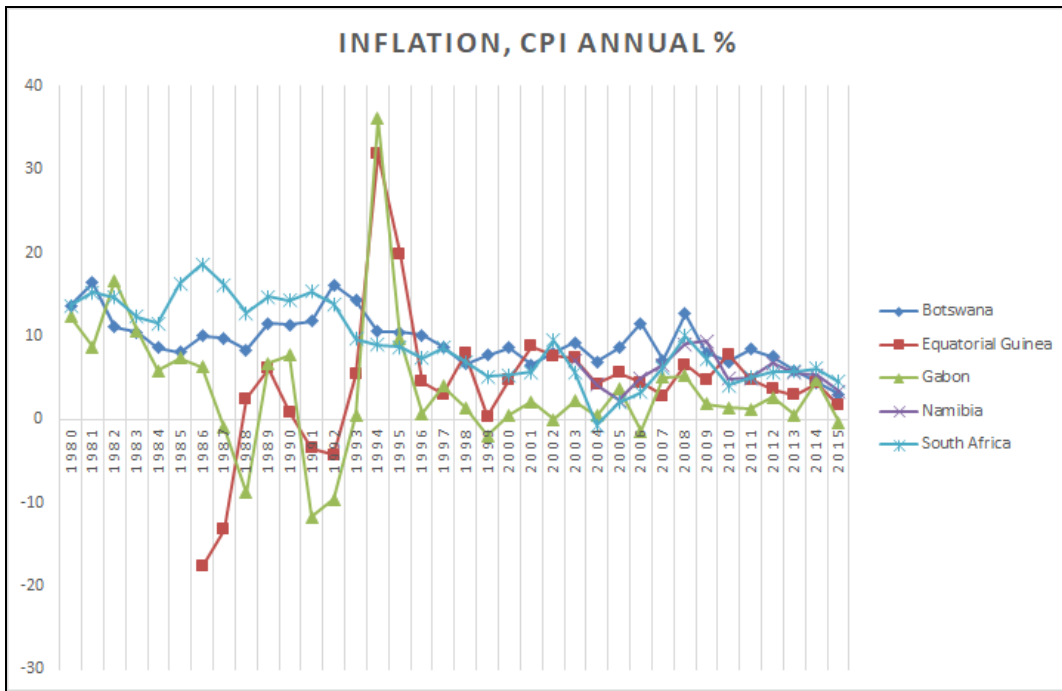
Figure 4.8 Annual Inflation Rate
Source: constructed by author, from World Bank data

Managing to collect tax revenue is often hindered by independent actors if they have the power to do it. The data available for this study is clearly limited, which is visible in the figure, however, several of our countries do show a rising trend of share of collected taxes. The access of data for this might also be a bit of a concern point as it might be due to a wish not to make it public.

Figure 4.9 Tax Revenue
Source: constructed by author, from World Bank data

In the case of the Central Bank index, not much has changed over the studied period, however the change we can observe is positive. Interestingly, when comparing the index with the inflation rate, the two countries with the highest indexes over time, Equatorial Guinea and Gabon are also the two countries 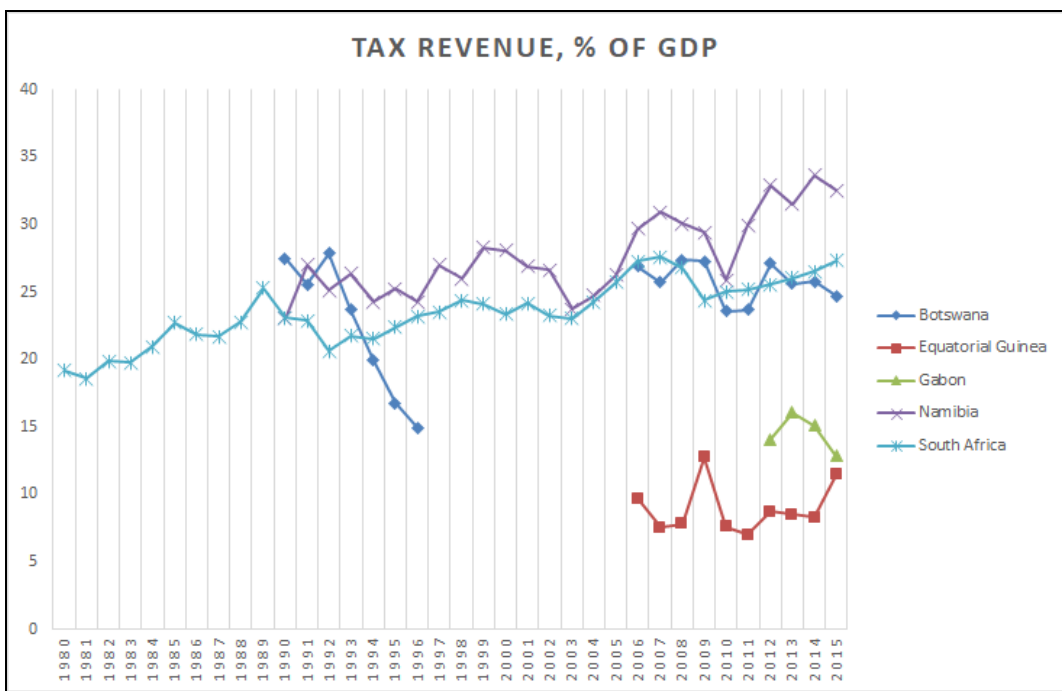with the most volatile inflation rates. This can of course be due to the chosen monetary system changing or shocks to the exports which they are most dependent on.
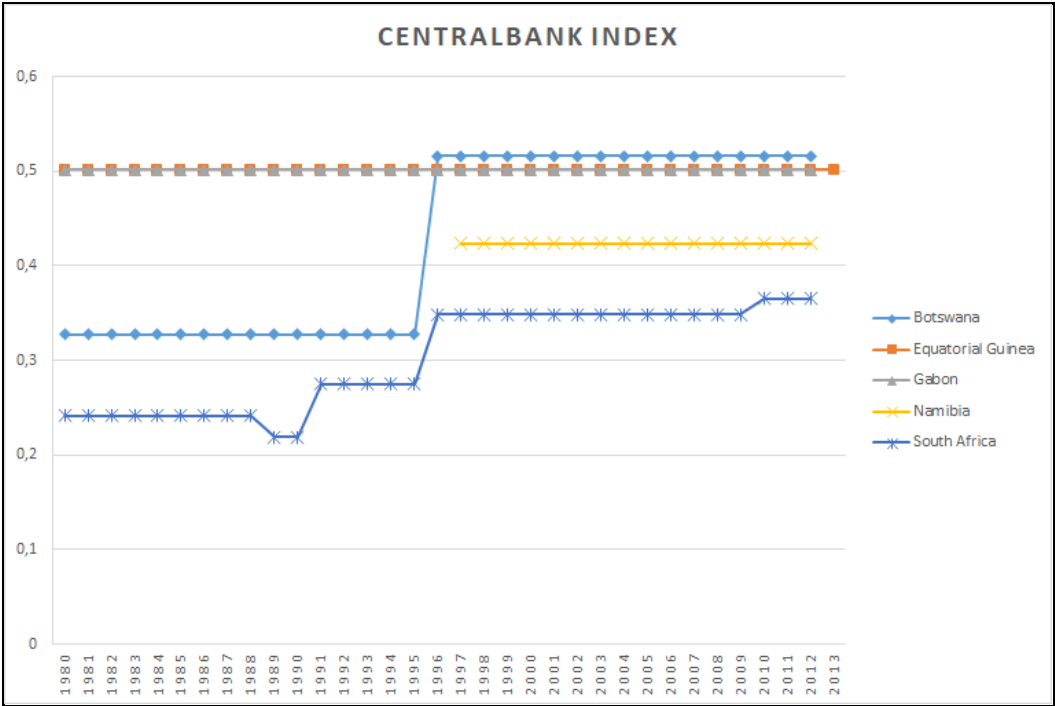
Figure 4.10 Central Bank Index
Source: constructed by author, from Garriga, (2016) data

As has been indicated by previous research, the autonomy of the state seems to be one of the more crucial capabilities both for promoting growth as well as increasing the resilience of the economy. As seems to be common with the OLS regressions, most of the indicators are significant, and for this indicator several of them stay significant even in the panel models with and without robust standard errors. The inflation rate will be chosen as the representative estimate for the complete model as it is the one which is significant for all three different approaches (model one, three and five). There seems to be a foundation to choose either of the other ones as well and von Borries (2019) chose the Central Bank index for his model, however in this study the inflation rate seems to be the most stable and representative choice.

Table 4.3 Estimating Indicators for Autonomy

	(1)	(2)	(3)	(4)	(5)	(6)
			log GDP pc LCU			
Constant	24.69***	7.941***	11.12***	10.80***	11.12***	10.80***
	(0.703)	(2.032)	(0.338)	(0.483)	(0.340)	(0.908)
Inflation rate	**-0.0678****	-0.00458	**0.0100***	0.000284	**0.0100***	0.000284
	(0.0254)	(0.0168)	**(0.00498)**	(0.00366)	**(0.00289)**	(0.00344)
log Tax Revenue	**-4.007*****	**-2.277*****	0.195	0.0669	**0.195***	0.0669
	(0.235)	**(0.208)**	(0.0992)	(0.0696)	**(0.0518)**	(0.0584)
log Central Bank Index	0.608	**0.859*****	**0.512*****	**0.279****	0.512	0.279
	(0.418)	**(0.246)**	**(0.114)**	**(0.0827)**	(0.268)	(0.158)
log Natural Resource Rents		**0.314*****		**0.132*****		**0.132*****
		(0.0759)		**(0.0172)**		**(0.0224)**
log Net Terms of Trade		**2.238*****		0.0710		0.0710
		(0.350)		(0.0931)		(0.132)
Observations	66	66	66	66	66	66
R^2	0.862	0.954	0.377	0.719	0.377	0.719

Standard errors in parentheses, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

4.1.4 Accountability

A state which is held accountable should be putting the welfare of all its citizens before a chosen few. This includes promoting their health and making healthcare available for more and more people. The child mortality rate is therefore measured in this case as this is often also interpreted as an indicator for poverty levels. Happily, the studied countries are all exhibiting a downwards sloping trend, even though Botswana experienced a rise in child mortality for about a decade, they are now down to their lowest levels yet observed. It seems that the majority of the countries have been promoting their healthcare access and improving it during this period.
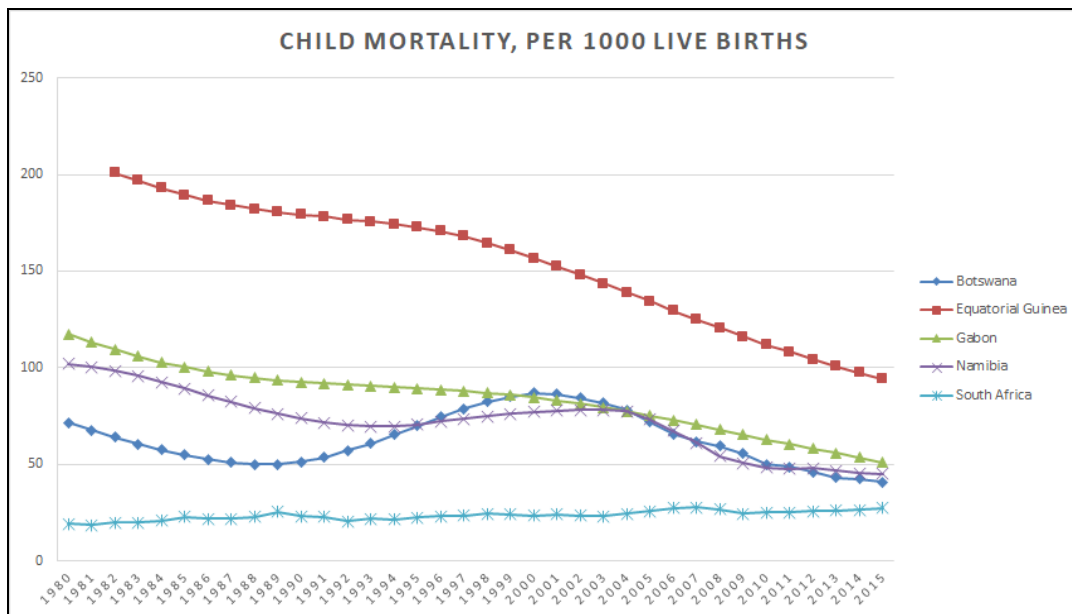
Figure 4.11 Child Mortality Rate
Source: constructed by author, from World Bank data

When looking at the access to electricity in the countries, the number are all very positive with a clear upwards trend. Equatorial Guinea is lacking data in this indicator as well, but the little data available shows a steady, reasonably high level of access. This indicates and strengthens the idea that the countries are working to implement technology in the state, and in the cases of South Africa and Gabon it seems that it is benefiting not only the rural areas but also the urban ones, since their access levels are so high.

Figure 4.12 Access to Electricity
Source: constructed by author, from World Bank data

The data available for the governments expenditure on education is unfortunately very slim and periodical, which is why linear trend lines have been added to award any sort of encom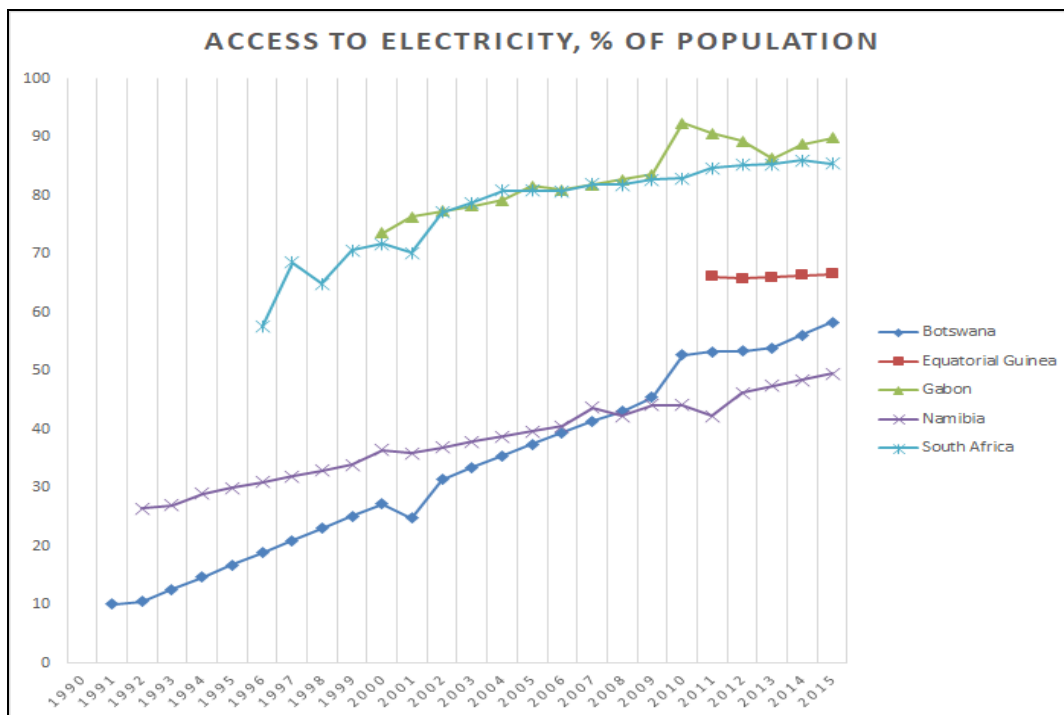passing picture. Worst of all is Equatorial Guinea where only one data point is available. There seems to be two extreme trends and two more slow going trends in both directions here, which might at first offer a negative view of how for example Namibia prioritizes educational spending. This might however be due to the amount being kept steady, and the GDP having grown, this is however not a desirable outcome for a developing economy, as building human capital through education is important to promote economic and human capital growth.
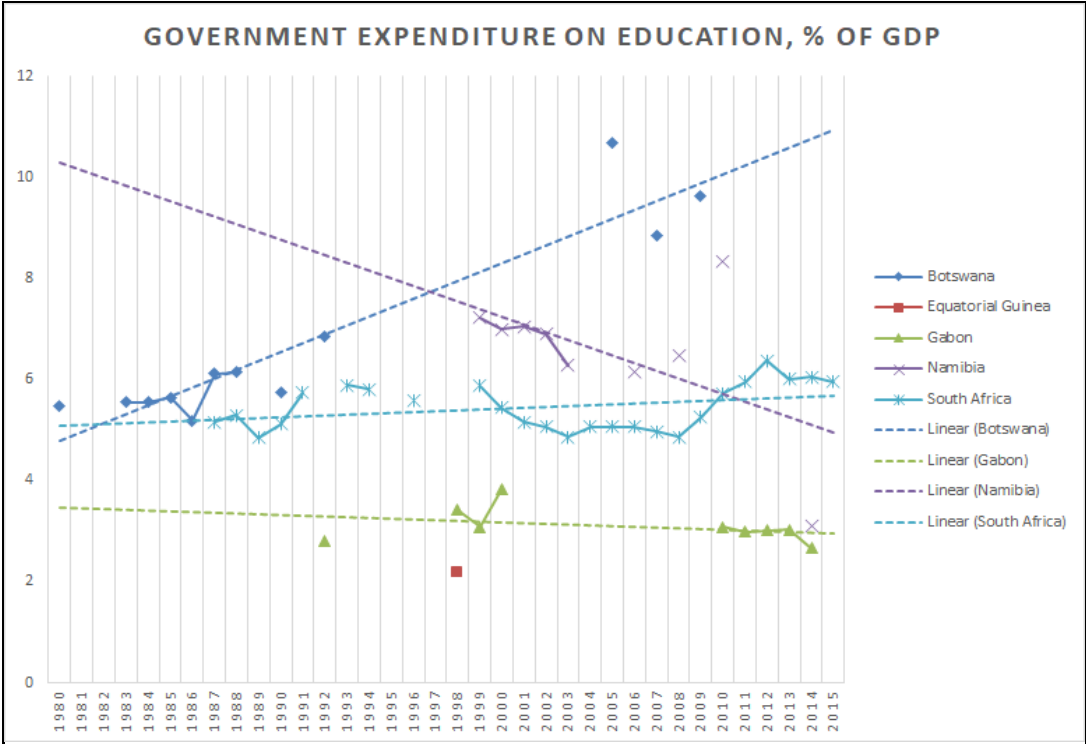
Figure 4.13 Government Expenditure on Education
Source: constructed by author, from World Bank data

Despite the lack of data for this indicator, several of the indicators are significant in multiple models, which indicates that the accountability of the state is important to their growth success. That indication would be in line with the previous research which has emphasized the importance of the accountability and autonomy of the state. The indicator which will be chosen for the complete model is the child mortality rate, as it is the one with the most consistent significance levels. However, both the electricity access and expenditure on education show four significant estimates. It is important though to notice that the estimates for education expenditures are negative which would indicate that as the expenditure share of GDP rises, the GDP levels would shrink which is unexpected and might be a reflection of the lack of data access.

Table 4.4 Estimating Indicators for Accountability

	(1)	(2)	(3)	(4)	(5)	(6)
			log GDP pc LCU			
Constant	17.92***	-3.606	11.22***	12.37***	11.22***	12.37**
	(4.270)	(5.901)	(0.349)	(0.524)	(0.332)	(1,036)
log Child Mortality Rate	-0.209	**1.739****	**-0.242****	**-0.240****	**-0.242***	**-0.240***
	(0.741)	**(0.570)**	**(0.0525)**	**(0.0520)**	**(0.0701)**	**(0.0591)**
log Electricity Access	0.114	**-1.060****	**0.322****	**0.150***	**0.322***	0.150
	(0.441)	**(0.312)**	**(0.0542)**	**(0.0517)**	**(0.0613)**	(0.0474)
log Gov. Expend. on Education	**-3.672****	**-1.364***	-0.134	**-0.108***	-0.134	**-0.108***
	(0.591)	**(0.522)**	(0.0717)	**(0.0507)**	(0.0990)	**(0.0324)**
log Natural Resource Rents		**0.726****		**0.113****		**0.113***
		(0.127)		**(0.0197)**		**(0.0194)**
log Net Terms of Trade		**2.751****		-0.143		-0.143
		(0.748)		(0.0729)		(0.162)
Observations	37	37	37	37	37	37
R^2	0.641	0.874	0.712	0.877	0.712	0.877

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.1.5   Economic performance

Figure 4.14 makes use of the GDP per capita levels in US dollars to be able to make a comparison between their progress. For this graph, an average of the five nations has been calculated and presented to give an overall picture of the economic trend and performance. The GDP per capita levels of the countries are rising, with Equatorial Guinea showing an extreme growth followed by a turn downwards around the time of the 2009 financial crisis. Gabon is also showing a bit of a deviating pattern with a slight downwards moving trend.
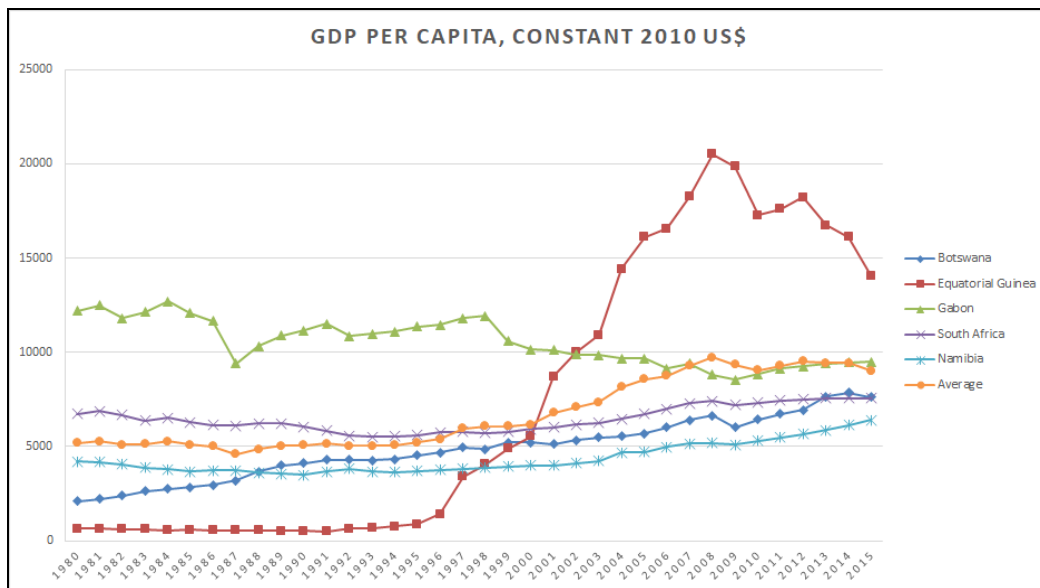
Figure 4.14 GDP per Capita
Source: constructed by author, from World Bank data

The diverging nature of Gabon and Equatorial Guinea is echoed in both the share of which natural resource rents make up of GDP as well as the terms of trade. The dramatic look of the GDP levels in Equatorial Guinea is closely mirrored in the natural resources rents, which indicates that they managed to make use of their natural resources during a certain period. However, Gabon's curve does not match their economic performance, which might indicate that they have been failing in some way to make use of these incomes. Their terms of trade is also matching Equatorial Guinea and they share their main source of exports which might indicate that Gabon are moving towards or already experiencing the "Dutch disease", which is where a natural resource is considered so important that it draws in investments and labour in unprecedented levels causing other parts of the economy to suffer. In the previous econometric models, these controls have alternately remained significant in the panel models, indicating that they do play a significant role in the development of the nation's GDP per capita levels and that changes to them therefore could be considered more important than the capabilities in some ways.
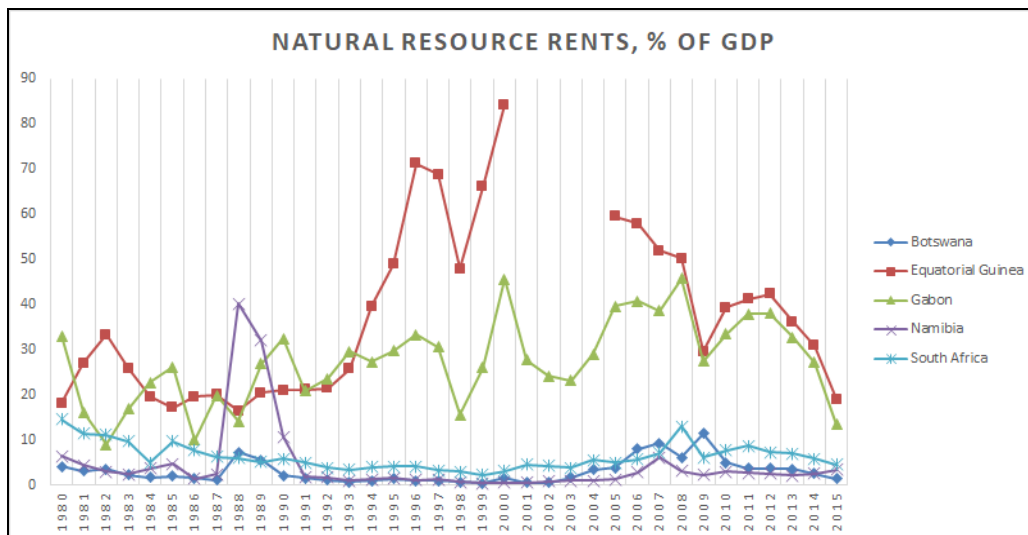
Figure 4.15 Natural Resource Rents
Source: constructed by author, from World Bank data
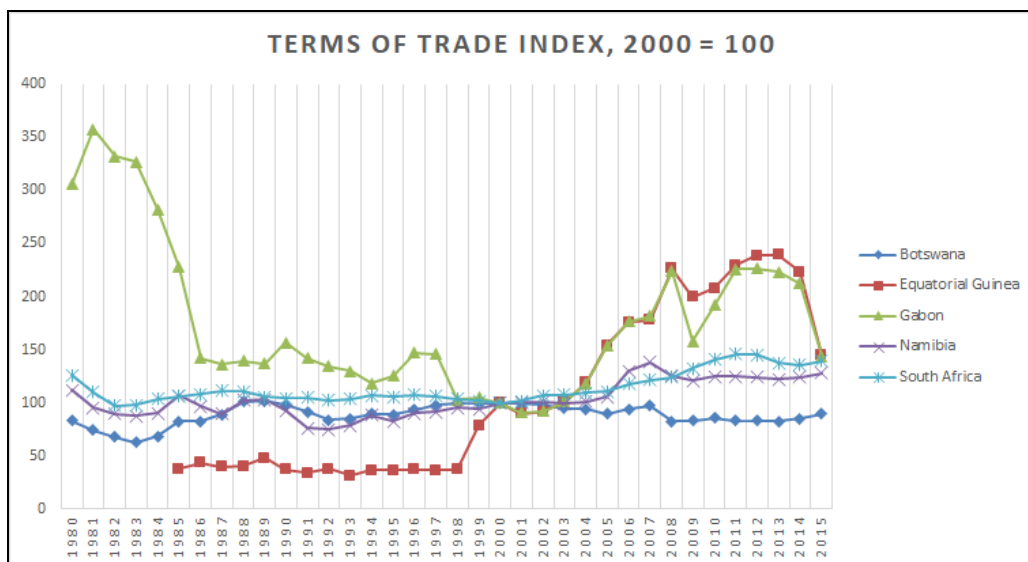
Figure 4.16 Terms of Trade
Source: constructed by author, from World Bank data

The framework chosen for this research was partially designed to be used to analyse resilience towards shrinking episodes. Looking at the frequency of shrinking years, it does seem like there might be something to this as the frequency of shrinking years has diminished from almost 50 percent shrinking during the eighties, to just over 25 percent in the most recent decade. As the majority of the indicators have been shifting in the desired direction during this period, part of this trend in shrinking frequency might certainly be due to better social capabilities.

Table 4.5 Shrinking Frequency by Decade

Years	Shrinking Frequency (% of years of decade)
1980-89	46
1990-99	28
2000-09	30
2010-15	26,7

Source: constructed by author, from World Bank data

In the combined regression model, one indicator from each capability is used, as motivated earlier for each section. They were chosen for being the most significant in the most models, however this approach does not seem to have yielded a useful model. The OLS models (one and two) are still offering up some significant estimates, however these are not the ones we are looking for. In the first panel data model, number three, two of our estimates are shown as significant for the GDP per capita levels and both of them are showing the signs we would expect them to. However, this changes when the controls are added and also in the models with robust standard errors where only the terms of trade is significant. Considering the results observed earlier this might be an indicator that there are too many variables missing from these models to accurately represent their role in economic growth.

Table 4.6 Combined Estimates Regression of Chosen Indicators

	(1)	(2)	(3)	(4)	(5)	(6)
			log GDP pc LCU			
Constant	1.837	- 6.140***	18.54***	5.154***	18.54*	5.154
	(1.215)	(1.410)	(1.176)	(1.311)	(4.611)	(2.116)
log Employment in Agriculture	**1.397***	**0.941***	**-1.282***	0.432	-1.282	0.432
	(0.189)	**(0.106)**	**(0.468)**	(0.345)	(1.754)	(0.422
log Gini Index	**-10.10***	- 3.536***	-2.779	0.961	-2.779	0.961
	(1.051)	**(0.734)**	(1.689)	(1.178)	(5.197)	(2.133)
Inflation rate	**- 0.0511***	-0.0177	- 0.0128	- 0.00515	- 0.0128	- 0.00515
	(0.0188)	(0.0102)	(0.00953)	(0.00601)	(0.00950)	(0.00376)
log Child Mortality Rate	0.514	**1.001***	**-0.722***	-0.0774	-0.722	-0.0774
	(0.350)	**(0.224)**	**(0.303)**	(0.215)	(0.401)	(0.338)
log Natural Resource Rents		**0.653***		0.0865		0.0865
		(0.0720)		(0.0653)		(0.0995)
log Net Terms of Trade		**1.789***		**1.354***		**1.354***
		(0.163)		**(0.110)**		**(0.281)**
Observations	113	109	113	109	113	109
R^2	0.750	0.930	0.258	0.718	0.258	0.718

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Since the combined regressions model is not offering up much of a result, a total model including all of the indicators is added and it offers up a lot more significant results, though only for the complete panel model with robust standard errors. However, it is important to notice that this total model only rendered 22 total observations, which is very few when considering the total number of GDP observations are 180, which means that we need to not make to strong assumptions based on these estimates since they do not represent the selection very well. Digging in to the estimates, there are some which show the expected signs and others which do not match up with how we would expect them to affect economic growth. Some examples of signs which makes sense are the agricultural share of GDP, the economic complexity index and the unemployment rate as well as the controls added. Should the share of agriculture's value added to GDP rise by one unit, the GDP per capita levels would lessen by 0,2 percent, which is in line with what we would expect from a country moving backwards in the transformation process. The indicators of state autonomy are however not showing the

expected signs since we would expect the signs for tax revenue to be positive since a rise in this indicator should translate into a higher level of autonomy and thereby should increase the GDP levels.

Table 4.7 Total Regression Model

	(1)	(2)	(3)	(4)	(5)	(6)
			log GDP pc LCU			
Constant	7.832	-1.406	10.24·	5.583·	10.24···	5.583···
	(5.597)	(5.157)	(2.611)	(1.618)	(0.0494)	(0.367)
log Agriculture, share of GDP	-0.00711	-0.592	-0.180	-0.212	-0.180	**-0.212···**
	(0.254)	(0.286)	(0.136)	(0.0807)	(0.0590)	**(0.00783)**
log Employment in Agriculture	0.367	0.933	-0.0421	0.0700	-0.0421	**0.0700·**
	(0.408)	(0.403)	(0.218)	(0.175)	(0.0450)	**(0.0133)**
Economic Complexity Index	0.116	0.572	-0.0463	0.0656	-0.0463	**0.0656··**
	(0.216)	(0.239)	(0.0928)	(0.0598)	(0.0263)	**(0.00732)**
log Export Diversification Index	1.172	0.462	-0.0294	-0.165	-0.0294	**-0.165···**
	(0.512)	(0.449)	(0.308)	(0.162)	(0.0293)	**(0.00649)**
log Export Quality Index	-1.089	-0.898	0.857	0.0197	0.857	0.0197
	(0.987)	(1.020)	(0.672)	(0.442)	(0.366)	(0.0131)
log Gini Index	-2.041	0.572	-0.110	0.778	**-0.110··**	**0.778···**
	(1.164)	(1.225)	(0.656)	(0.436)	**(0.00897)**	**(0.0267)**
log Unemployment	-0.146	-0.313	-0.159	-0.0631	-0.159	**-0.0631··**
	(0.426)	(0.354)	(0.289)	(0.184)	(0.0731)	**(0.00493)**
Inflation rate	-0.00354	0.00635	0.00378	0.00209	0.00378	**0.00209···**
	(0.0113)	(0.00901)	(0.00502)	(0.00240)	(0.00160)	**(0.000144)**
log Tax Revenue	-0.370	**-1.801·**	0.243	-0.225	0.243	**-0.225·**
	(0.596)	**(0.653)**	(0.221)	(0.182)	(0.0872)	**(0.0390)**
log Central Bank Index	0.576	-1.939	-0.600	-1.971	**-0.600·**	**-1.971···**
	(1.820)	(1.584)	(1.337)	(0.716)	**(0.154)**	**(0.117)**
log Child Mortality Rate	-0.625	0.588	-0.0920	0.251	-0.0920	**0.251··**
	(0.451)	(0.550)	(0.161)	(0.111)	(0.0515)	**(0.0277)**
log Electricity Access	**1.683··**	0.422	0.119	-0.107	**0.119·**	**-0.107··**
	(0.439)	(0.535)	(0.229)	(0.124)	**(0.0307)**	**(0.00941)**
log Gov. Expend. on Education	-1.184	-0.318	0.0535	0.298	0.0535	**0.298··**
	(0.714)	(0.686)	(0.251)	(0.140)	(0.157)	**(0.0413)**
log Natural Resource Rents		0.178		**0.104·**		**0.104···**
		(0.118)		**(0.0259)**		**(0.00556)**
log Net Terms of Trade		**2.401·**		0.754		**0.754···**
		(0.832)		(0.252)		**(0.0440)**
Observations	22	22	22	22	22	22
R^2	0.996	0.998	0.981	0.997	0.981	0.997

Standard errors in parentheses, · $p < 0.05$, ·· $p < 0.01$, ··· $p < 0.001$

4.2   Results Analysis and Discussion

With the social capabilities framework, we would expect that there exists a causation between the indicators of the capabilities and the GDP per capita level as well as the resilience to economic shrinking. The results acquired from this research are in some ways ambiguous and in some ways contrary. The studied countries have all shifted away from agriculture being the driver of the GDP, indicating that they are managing to incorporate technological progress to increase productivity, however this progress does not seem to be transferring into the manufacturing sector as would be expected. In appendix B, each country's structural change including manufacturing and service is presented and except for Equatorial Guinea, none of the countries are showing any high levels of manufacturing but rather the biggest value added to each economy is the service sector. As mentioned in the previous research section, the question remains how successfully the service sector can drive the economy as it has not been the trend seen historically, however it seems likely to be the path several countries will need to take in the future. The rise of the manufacturing sector in Equatorial Guinea does coincide with their dramatic economic growth spurt, indicating that a shift towards this sector might be of importance to the GDP growth. The importance of the transformation capability is strengthened by the estimates rendered, where four out of the five are significant in the total model even though the smaller models (Tables 4.1 and 4.6) do not show the same level of significance. Even though the results for the export quality and diversification are in part insignificant or showing the wrong sign, it does make sense that these things would be important for a country which is in large part dependent on exports. It might simply be that this effect is much more prominent in avoiding shrinking in the face of shocks towards the economy rather than directly benefiting GDP growth.

Moving on to the inclusion capability, the results might possibly be biased due to the lack of change for the Gini index. The spread of wealth should theoretically ensure that people are able to better participate in the economy and drive it forward along with other benefits. The Gini index for our studied countries however have barely changed during the period, except for South Africa who have experienced a rise in their inequality numbers. This might be the reason for the lack of significance in Table 4.2 and the contradictory results in Table 4.7 where model five offers us the expected sign of the estimate however model six offers a positive sign meaning that an increase in inequality would benefit the GDP. The unemployment estimate however does offer the expected sign and shows a converging trend amongst the studied countries. It is

not surprising that a lower unemployment level also leads to higher GDP levels, however the potential effect that unemployment could have on shrinking episodes is unclear. Could it be possible that with high employment an external shock will lower the GDP due to rising unemployment levels and people losing their economic power, or will a high employment level lead to the population having created their own savings which will therefore maintain the economic activity of the population.

The state autonomy has in previous studies been deemed as one of the more important capabilities in the economic growth and strength of an economy. The results estimating the impact of inflation rate are rather hard to make something out of, as it does not really matter whether they are positive or negative as whether or not a change is good depends on the level of the inflation rate before the change. Focusing instead on the converging nature of the graph, it seems that the researched countries have all realised the importance of a stable inflation rate and are managing to meet their set goals. Based on this it seems that the banking systems in the countries are working in this sense and in combination with the fact that the Central Bank Index have not dropped for any studied country during this period, it seems that they have all achieved a certain level of independence from the government. As for the estimates, it seems like these indicators are affected by the small sample of observation in Table 4.7, as these results go against the expected signs and do not match with the significant results from Table 4.3. The effect which autonomy might have on shrinking is not crystal clear, however an independent central bank which is focusing on keeping the economy stable should be able to minimize the negative impact on the economy from shocks as well as adjust to business cycles. This effect might not cancel out negative spells in the economy every time, as developed countries still go through shrinking spells if the shock is big enough, but it should certainly lessen the frequency of shrinking years in the long run.

In the case of state accountability and economic performance, it too has been mentioned as one of the more important capabilities in the role of economic performance. The results however are a bit difficult to interpret as it seems they have also been affected by the lack of observations, causing some estimates signs to change. On a closer inspection however, some of the indicators for this capability might not have such a big impact on economic performance, but is rather an effect of good economic performance. The child mortality rates dropping as they have is most likely an effect of the GDP levels rising rather than the other way around, it does however show us that the governments are taking their mandates seriously and offering better quality of health care services. The educational expenditures are probably both affecting the economic

development and being affected by it as a highly educated population is more likely to invest, innovate and drive the economy. As the economy grows, so does the expenditure into education most likely, however this does of course depend on how the schooling system works and who pays for it. The electricity access is likely also more affected by economic growth, rather than causing much change and in this capability as well it seems like the studied subjects are stepping up and providing expanding services. When analysing the effect on diminishing shrinking years and rates, there is no obvious connection between the indicators and preventing shrinking, however an argument could be made that a more educated population has an easier time adapting in the face of shocks, which might lower the shrinking duration. More educated people might also drive the creation of more diverse industries and working opportunities, which would also make the economy less vulnerable in the face of shrinking.

The results for the different capabilities are in no way clear cut or easily interpreted. For many of the studied indicators of the capabilities the trends are moving in the desired direction and they are showing the expected signs in the regression outputs. However, there exists a lack of data for certain variables, leaving us with a total regression output of only 22 observations out of 180 GDP per capita observations. Several of the chosen indicators are not exogenous, meaning that we need to be careful when making any assumptions regarding the implication of their estimates. With the results presented it seems rather difficult to make any assumptions on which capability might be the most important in the development of a country's economic performance in line with the conclusions in previous research. It does also seem impossible to state that they are not important in the process, as several of them are showing appropriate signs and their development changing in the right direction along with the economic performances of the countries. Judging by the dramatic drop in shrinking frequency, despite several global economic crises, it seems likely that the capabilities are aiding in limiting economic shrinking as has been motivated in the earlier sections of this analysis. Any deeper of an analysis into this phenomenon however does not seem appropriate at this point, since that was not the main focus of the methodological approach.

To summarize the results of this research, this group of countries are generally displaying signs of higher levels of social capability and it has most likely aided their economic performance. This is hopefully indicative to them being able to achieve serious catching up growth, the opening question of this research. However, these five countries are far ahead of several of their continental neighbours and some of the indicators are not moving in the desired direction, making it clear that there are several sections of the societies where there is a lot of work

remaining. There are several countries on the continent who are not ready to achieve catching up based on this framework, however these results suggest that there is reason to be optimistic that this is not an impossible dream.

It also seems inappropriate to leave this analysis before mentioning the role of the terms of trade and the natural resources rents on the economic performances. These controls are the only things which have been continuously significant through the different models, and when studying the economic performances, it is impossible to ignore their role, which is of course why they were included in the models. As mentioned earlier, these countries are rich in natural resources and part of their economic success seem to likely be due to the managing of these resources. This in and of itself might actually be proof of increased social capabilities as proper management and governance is a part of the social capabilities and so to successfully create economic gain from natural resources is proof of success.

5   Conclusion

With the help of the social capabilities framework, the economic performance of a select number of countries was evaluated. Due to the data access and endogeneity issues, it is not possible to draw conclusions on the size of the effects, however it is concluded that it is not possible to deny that the social capabilities have aided the economic performance of the countries. The majority of the capabilities have evolved in the desired direction, even though some of the indicators suffer due to a lack of data the trends generally look good for the studied countries. Through the chosen methodological approach, it has not been possible to determine whether one of the capabilities has been of more import than others, as has been suggested in other research using the same framework. In the case of the economic resilience, the frequency of shrinking has dropped dramatically since the 80's, and it is theorized that several of the indicators have played a part in that even though the methodological approach was not used to determine the possible size of this effect. The objective of this research was to investigate the social capabilities of a number of economies in Sub-Saharan Africa which have achieved the highest GDP per capita levels to find if this implies that Africa has what it takes to drive economies forward. The studied economies have in most cases successfully developed their capabilities, as estimated in this research, which should indicate positive outcomes. It is however important to remember that the countries of the continent which are at the economic bottom are very far behind and that certain areas are facing massive problems with ethnic fractioning. Hopefully the successes of the studied countries might spread to their neighbours. There is still much work to be done, both for the countries studied as well as those not included however this research should inspire hope that it is not an impossible goal.

This research continues to build on the previous material supporting the importance of looking at the economy as a whole rather than as separate parts which only contribute in part to the economy. The results support the ideas of policymakers who look to help develop multiple parts of the state and the way that they link with each other, rather than only focusing on sponsoring one function. This study was not able to confirm whether one capability is of more import than any other, which puts emphasis on the importance of viewing the economy as an interlocking system. This limited research makes it clear that there is still much room for research into

economic shrinking and resilience. Considering the research objectives, further research into the African continent seems of extra importance as they are currently facing big challenges going forward. As a continent they have so much potential and at the same time they are also in a vulnerable position to climate change, are combating very serious diseases and never before have so many people lived in poverty on the continent, and any research which could benefit such a large number of exposed and vulnerable people is important.

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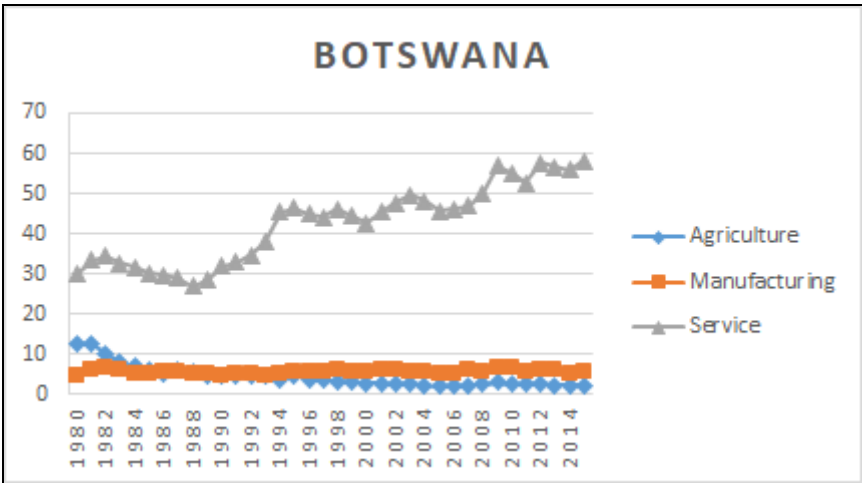Young, A. (2012). The African Growth Miracle, *Journal of Political Economy*, Vol. 120 No. 4, August 2012, pp. 696-739

Appendix A

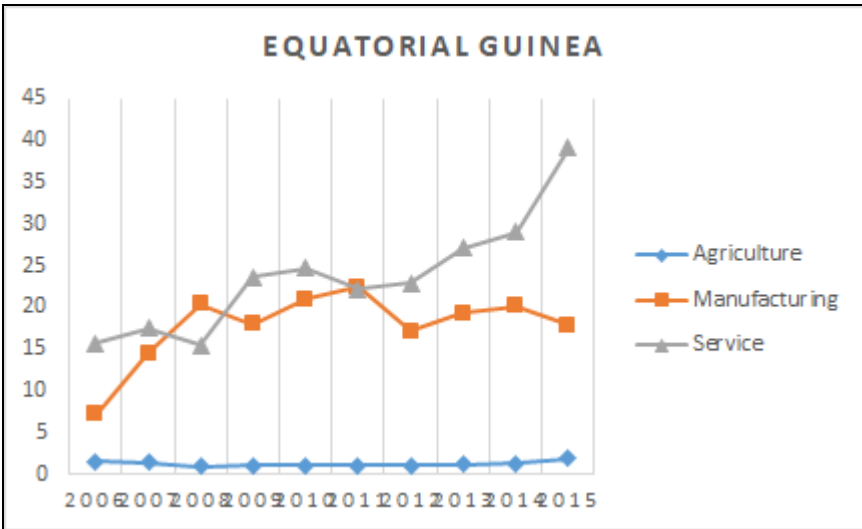Correlation Matrix, codebook available with author for abbreviations

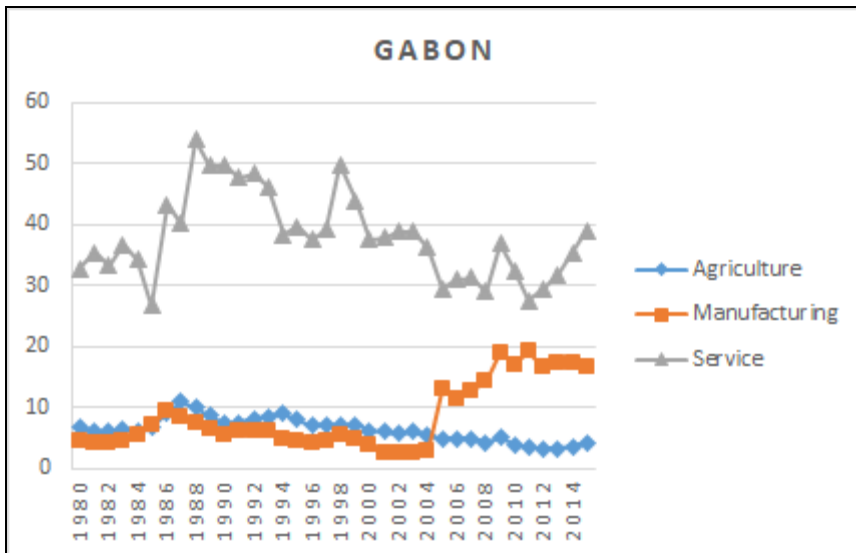|	gdppclcu	agrgdp	empagr	eci	exd	exq	gini	une	inf	tax	cbi	mort	ela	exed	nrr	nbtot
gdppclcu	1															
agrgdp	-0.0615	1														
empagr	**0.456**	**0.696**	1													
eci	**-0.598**	**-0.537**	**-0.859**	1												
exd	**0.575**	0.325	**0.836**	**-0.891**	1											
exq	**-0.784**	-0.481	**-0.678**	**0.686**	-0.483	1										
gini	-0.402	0.527	0.394	-0.321	0.414	0.202	1									
une	-0.228	-0.301	**-0.645**	**0.616**	**-0.826**	0.163	**-0.667**	1								
inf	-0.273	0.165	0.0913	0.0191	0.0225	0.150	0.299	-0.227	1							
tax	**-0.778**	0.240	-0.126	0.248	-0.185	**0.574**	**0.662**	-0.174	0.282	1						
cbi	0.432	0.287	**0.839**	**-0.749**	**0.940**	-0.347	0.451	**-0.830**	0.117	-0.113	1					
mort	-0.137	-0.007	-0.175	0.267	-0.402	0.0448	-0.388	**0.595**	-0.194	-0.0922	-0.359	1				
ela	0.269	**-0.737**	**-0.711**	0.447	-0.454	0.115	**-0.638**	0.495	-0.353	-0.404	-0.580	0.0778	1			
exed	-0.444	0.234	0.343	-0.106	0.353	0.374	**0.721**	**-0.570**	0.298	0.499	0.553	-0.405	**-0.719**	1		
nrr	**0.918**	-0.280	0.322	-0.483	**0.597**	**-0.531**	-0.313	-0.385	-0.165	**-0.655**	0.484	-0.277	0.346	-0.316	1	
nbtot	**0.824**	-0.0442	0.224	**-0.524**	0.439	**-0.636**	-0.218	-0.240	-0.277	**-0.531**	0.192	-0.448	0.430	-0.492	**0.784**	1

Appendix B
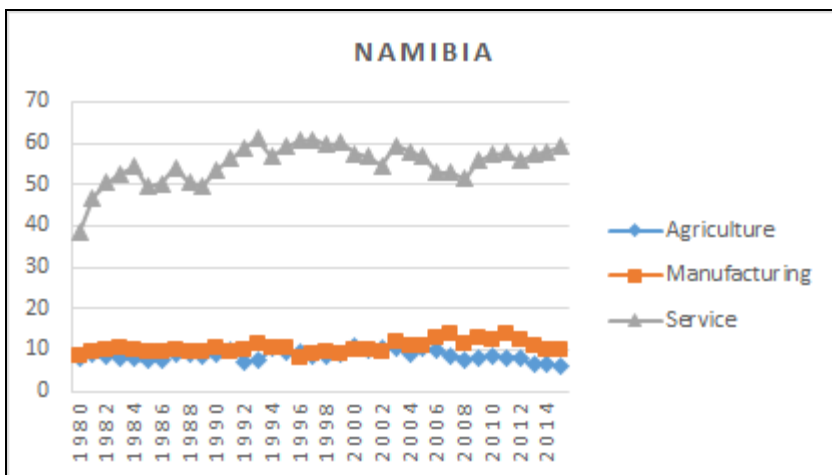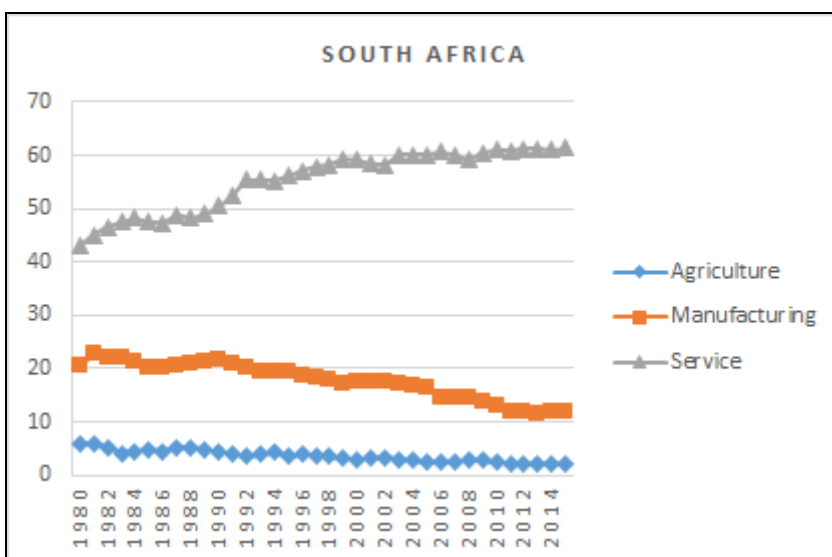
Structural Transformation by Country

Source: constructed by author, from World Bank data

Source: constructed by author, from World Bank data

Source: constructed by author, from World Bank data

Source: constructed by author, from World Bank data

Source: constructed by author, from World Bank data

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