ANALYZING IF DEMOCRACY CAN HELP TO DEVELOP AFRICA.

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ABSTRACT

This paper looks at the relation between democracy and economic growth. It analyses whether democracy has had a positive effect on the economic growth of Mauritius. This island is chosen for two reasons: it is the highest ranked democracy in Africa and has the second highest GDP per capita in the continent. While the results of a VAR quantitative analysis are not conclusive, an in depth qualitative analysis shows that a very big part of the miracle that Mauritius has achieved in terms of development would not have been possible without democracy.

Keywords: Mauritius, Democracy, Economic Development, Economic Growth, Growth Theories.

RESUM

Aquesta tesina estudia la relació entre la democràcia i el creixement econòmic. El treball analitza si la democràcia ha tingut un efecte positiu en el creixement econòmic de Maurici. Hem escollit aquest país per dues raons: està considerat el més democràtic d'Àfrica i disposa de la segona renda per capita més alta del continent. Tot i que els resultats del anàlisi quantitatiu no son conclusius, l'anàlisi qualitatiu demostra que una gran part del miracle mauricià de desenvolupament no hauria estat possible sense democràcia.

Paraules claus: Maurici, Democràcia, Desenvolupament Econòmic, Creixement Econòmic, Teories sobre el creixement,

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I. INTRODUCTION

The Human Development Index of the United Nations allows to rank the countries from more developed to less develop. 40 among the top 50 countries (the more developed) of the ranking are considered advanced democracies by The Economist, seven of them are dictatorships and three of them are "democracies" controlled by a single party[1]. On the other hand, among the 50 countries at the bottom of the ranking, we find only four democracies: Vanuatu, Gambia, Ghana and Lesotho. Another important characteristic that we need to say is that 41 of these 50 countries in the bottom are located in Africa; 76% of the countries in that continent are amongst the least developed in the world. With this data in hand, the reader may conclude that the best way to develop a country is through democracy. His/her might also think about the different problems that Africa is experiencing in terms of development. The problem is that with this topic there is not that straightforward conclusion (as our imaginary reader did), because it is not clear whether democracy is causing economic growth or democracy is caused by economic growth.

The view that "democracy" was the "best" way to develop a country was the dominant one until the 1960's. In that decade a new type of countries started to appear: the newly industrialized countries (NIC's). They appeared in East Asia and also in South America. They were characterized by being authoritarian regimes that created market-friendly institutions and export- oriented economies. These regimes promoted the accumulation of physical and human capital to converge with the "rich" western countries. Some economists concluded that the most important achievement made by these regimes was securing property rights for private companies and investors. Democracy was not the only type of institutional system that could keep commitment in the laws passed, institutions that could work properly and also that could keep the rent-seekers out of the picture. The debate on the relation between democracy and development was further enhanced by a paper by Seymour Lipset published in 1959: *Some Social Requisites of Democracy : Economic Development and Political Legitimacy*. The author argued that democracy without human capital (education) was destined to fail. Cause uneducated people tend to be more attracted to extremist ideas that could jeopardize the whole system.

This research ponders whether the way for Africa to develop is through democracy. The hyphotesis is that democracy has a positive effect on the economic development of a country. To test the hypothesis, we propose a study in depth of Mauritius, one of the few African countries considered developed and also a working democracy. The research is structured in six chapters. After a brief second chapter on how different Internation Economic Organizations establish the degree of development of a country, the third chapter focuses on the factors of development identified by the economic literature. The fourth chapter then presents and justifies the methodology, chapter five presents the results of the quantitative analysis and chapter six the results of the qualitative analysis. Chapter seven concludes.

[1] The Russian Federation, Singapore and Hong Kong SAR

II. IEO'S CLASSIFICATIONS OF COUNTRIES BASED ON THEIR DEVELOPMENT

1. Introduction

According to the Society of International Development Israel development can be defined as "a process that creates growth, progress, positive change or the addition of physical, economic, environmental, social and demographic components"(SID ISRAEL, 2020), it is a perfectly good definition. The problem comes when we need to classify countries in developed and underdeveloped for "operational" motives. In order for the International Economic Organizations (IEO) to know what countries need more help and from which countries to ask for funding, they need to stablish a threshold that classifies the country. These thresholds will need, moreover, to be dynamic. Development is a process which means that it is continuous, there is no limit in development. The so-called developed countries continue to develop nowadays and they will continue to do it in the future. This continuity means that the developed threshold will continue to increase, meaning the in a near future the values that form this threshold could be higher than the values of the most developed country nowadays. The objective of this chapter is to explain which the threshold is established by three key IEOS that focus on development: the World Bank (WB), the International Monetary Fund and the United Nations Development Program (UNDP), and the reasons behind each.

2. Classification of countries according to the World Bank

The WB is an International Organization created after the II World War to help reduce the income gap between countries. This section explains how it classifies these countries into developed and developing countries as well as the reasons for having a classification.

2.1 Which is the threshold?

The main indicator that the WB uses to measure development in order to establish the classification is the GNI per capita in US dollars using the Athlas method. It uses this indicator because it is "strongly correlated with other non-economic indicators such as life expectancy at birth, mortality rates of children, and enrollment rates in school." (World Bank, 2020) This barometer have problems measuring the economy of the poorest countries in the world, due to the fact that a big number of their population is dedicated to subsistence activities that are not reflected in this indicator. This problem could cause the GNI to be underestimated. It also experiences the same problem as the GDP per capita which doesn´t reflect inequalities in the distribution of income.

2.2 Why a classification?

The WB needs to distinguish between developed and developing countries basically for operational reasons. The most important goal that the Bank has is the eradication of poverty and helping underdeveloped countries to develop. To carry out these objectives the Bank created five institutions: International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), Multilateral Investment Guarantee Agency (MIGA), International Finance Corporation (IFC) and the International Centre for Settlement of Investment

Disputes (ICSID). While the later three focus on fostering the private sector, the first two offer financial support to the governments of developing countries. These two institutions were born to help the middle and low income countries respectively.

The IDA takes care of the countries (with grants and zero percent interest loans) that have a GNI per capita below 1.025$ and cannot borrow from international markets. While the IBRD gives loans with interest to the countries that are considered middle income: GNI per capita between (1.025$ and 12.376$.). We have to make an important consideration here, the WB divides this group into two smaller groups: lower middle (GNI per capita between 1.025$ and 3.996$) and upper middle (between 3.996$ and 12.376$). The argument behind this split, is that countries located inside the lower middle group they still have a lot in common with the lower income group (low degree of creditworthiness) and that the ones located in the upper middle have different necessities (advisement in different policies, attracting more FDI). Finally, we have the countries who have more than 12.376$. The main purpose of these countries is to finance both institutions, they cannot receive financial support from the WB.

3. Classification of countries according to the IMF

The IMF is an International Organization created after the II World War to help ensure the stability of the international monetary system by providing loans to member countries with a balance of payments crisis. While its main objective is not the development of developing countries, it still needs to distinguish between developed and developing countries.

3.1 Which is the threshold?

The IMF does not explain which the threshold that uses to distinguish between developed and developing countries. This may be due to the fact that this institution is mainly interested in identifying the less developed group of countries. While usually this group includes the same countries as the low-income group of the WB, it is not a perfect match.

3.2 Why a classification?

Again, the classification is mostly the result of operational needs. It was introduced in 1986 when the IMF stablished the structural adjustment fund. The main idea was to help "all low-income countries eligible for IDA resources that are in need of such resources and face protracted balance of payments problems" (Nielsen 2011, 6).Nowadays the IMF is in charge for accepting new members into the Poverty Reduction and Growth Facility[2] (PRGF). We see that in this case the IMF was required to make this list, to know exactly which underdeveloped countries were experiencing balance of payments problems.

The IMF also uses a classification between developed and developing countries for analytical reasons. Its annual publication *World Economic Outlook* offers a classification of the countries based on their level of development. The countries are divided into two groups: advanced economies and developing countries. The only hint that we have about what criteria the IMF uses in

[2] The PRGF is the institution of the IMF that give money to the poorest countries. The country must have 2 requisites: be eligible to get IDA resources and have a balance of payment crisis

order to determine what a developed country is and what is not, is from 1997. That year Israel, Korea and Singapore changed groups. The reason was the following "rapid economic development and the fact that they now all share a number of important characteristics with the industrial countries, including relatively high income levels (comfortably within the range of those in the industrial country group), well-developed financial markets and high degrees of financial intermediation and diversified economic structures with rapidly growing service sectors."(Nielsen 2011, 17) After this paper, the IMF has not given any more definition about what considers to be a definition of an advanced economy.

4. Classification of countries according to the UNDP

The UNDP is part of the United Nations. Its objective is to put forward a non-economic threshold to distinguish between developed and developing countries

4.1 Which is the threshold?

The Human Development Index (HDI) is grounded on three dimensions that are considered the keystones of human development: healthy life, education, and a decent standard of living or income. To measure these dimensions the UNDP uses three indicators. Life expectancy at birth is used as a proxy of a healthy life; for education it is a combination of the mean of the actual years that adults aged 25 years or more have studied and the expected years of study for newborns; finally, income or standard of living is measured with the Gross National Income (GNI) per capita in local currency converted into US dollars using Purchasing Power Parity (PPP). After the value of these indicators is found, they need to pass a process of transformation in order to be put into the index. The formula for the transformation is the following:

$$X = (Xactual - Xmin)/(Xmax - Xmin)$$

The maximum value in the case of every indicator is the highest value observed in a certain period of time. The actual value is the value observed in the year of the study. While the minimum value is different for every indicator (for education it is 0; for life expectancy it is 20 years; and for income it is 163$ which is the lowest value ever observed. The result of this formula will give us for each country a result between zero and one (zero being the lowest, one the highest). After the results, the countries are put into a classification where, the top quartile of the distribution is considered to be developed, while the other three are considered developing.

4.2 Why a classification?

The main purpose of this classification is analytical. It is based on the assumption that to establish a good classification we should look at more indicators than just the economic ones. The exact words are "people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone" (UNDP, 2020).

5. Conclusion

The IEO's do not have a general agreement for what should be considered the development threshold. Moreover, they do not usually clarify why they consider this threshold to be the appropriate. One possible reason for this to happen is that this threshold is the one which benefits them the most when carrying out their main function (we cannot forget that the main function of these organizations is not the classifications, but rather ending poverty and helping countries develop in the case of the WB and helping countries to maintain a correct balance of payments in the case of the IMF). Finally, even when they use similar variables, they still use different calculation methods. As an example, the UNPD to measure income uses the GNI per capita by PPP in return the WB uses the GNI per capita by the Atlas method. This problem leads to the point where we find that countries can be considered developed and underdeveloped at the same time.

III. DEVELOPMENT FACTORS

1. Introduction

In the previous chapter we talked about the difficulty of creating a development threshold, due to the different opinions or calculations methods that can be used in order to create one. In this chapter we present the development factors identified by the economic literature. The first section focuses on the exogenous and endogenous "economic" factors while the second section explains the "non-economic" institutional factors.

2. Economic factors

The economic literature identifies three main development factors: capital, labor and technology. This section presents the main economic models around these factors taking into account that they have been studied through two different perspectives: as exogenous or as endogenous. The first perspective is better at explaining the first stages of development while the second tries to explain long-term growth.

2.1.Exogenous Theories

The typical neoclassical function of production (it is widely used in economics) is Y = F(A,K,L). What this function is saying is that output depends on technology (A), capital (K) and labor (L). There are a lot of theories that try to explain the role of each factor in terms of contribution to the growth.

The Capital Accumulation theory focuses on the contribution of capital to growth and is captured by the Harrod-Domar model (1946). This theory gave origin to the so-called capital fundamentalist movement which consist in investment and capital accumulation playing a key role in economic growth. The most important assumption of this model is the following: *"*GDP growth will be proportional to the share of investment spending in GDP" (Easterly 1997, 3) what this assumption is stating, is that in this model capital (machines) is the constraint in the economy. We are always going to have people that can run the machines (Domar's theory came out during the great depression time).

The focus shifted to labor mixed with capital accumulation in the next evolution of this model, which was presented by Arthur Lewis in his book: *Development Planning: The Essentials of Economic Policy (1966).* In this book Arthur Lewis considered labor rich developing countries. His work started by making this statement: "the central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing four or five per cent of its national income or less, converts itself into an economy where voluntary saving is running at about 12 to 15 per cent of national income or more"(Gollin 2014, 82). The existence of this problem is strongly related to the assumption made by Arthur Lewis that the supply of capital is fixed in the short run (the author introduces foreign assistance and investment as a way to solve this problem) for the underdeveloped countries. In his words: "Not enough machines for all of the people".

Arthur Lewis theorized about a two-sector economy in a country. One, which has big amounts of unused labor and low productivity normally called the agricultural sector (even though the

author acknowledges that this sector have parts that are at the same level in terms of productivity as the advanced sector). The other is the so-called high productivity sector, the only sector able to reinvest their earnings because they experience profits. In this model the only source that is able to create some kind of growth is capital. Why? Because in the unproductive sector, the productivity is so low, due to the vast amounts of labor that erases the necessity of investment (K) that makes productivity increase. Thanks to this huge amount of labor available in this "poor" sector, the capitalist sector can hire these "surplus" workers for a wage that is slightly above the subsistence line. These new workers will produce a higher output in this sector than in the former, due to the level of capital that is invested in this modernistic sector.

In the short time this big difference between the output produced and the wages paid to the workers is translated into big profits. The profits will be reinvested in order to increase the level of production. From the short time we can take the conclusion that the reinvestment is originating economic growth for the country. This new level of production is going to increase the demand for new workers, this new people will produce less than the old workers (decreasing marginal products) but they are going to be paid the same (profits will decrease), at the end due to the increasing demand for workers we will reach a point where the supply of labor from the antiquated sector is exhausted, thus starting a competition between capitalists in order to attract workers (Wages will increase). This increase in wages and the decrease of the marginal productivity with every new worker added will cause a decrease in profits thus reducing investment. Arthur Lewis called this the turning point of an economy. This is the moment where you cannot longer growth by accumulation of capital, but you have to find other ways. In other words, this is the moment when a country reaches the steady state[3].

The Solow-Swan model focuses on technology in the long run and capital accumulation in the short. The main equation contains three factors: Capital, Labor and Technology. The model considers the growth of labor as something constant. One of the most important assumptions that the model makes is that technology is exogenous[4]. It is given to the country. Knowing that the growth of the population is constant over time and that technology is exogenous, the only parameter left is capital. The importance of capital can be summarized in the following statement: If a country is able to increase the rate of savings this will be translated into an increase in the rate of growth of the economy, but this way of growing only works for a certain period of time. The economy will reach a certain state where growth of the national product is going to be equal to the growth of the technology in the economy.

One of the reasons that the model uses to justify the steady state is that capital experience diminishing returns. At the early stages of development capital investment is extremely productive. We do not have to use any of the new machines to substitute the old ones so all of the investment will be focused in creating new product thus the growth rate of the GDP will be really high in the first periods of development, but time passes which affects both population and the number of machines that need substitution which means that now, we will be forced to use a high percentage of the savings in substituting machines and also maintaining the ratio of

[3] The definition of the steady state is the moment when the "national" economy of a country reaches a state, where the whole production of a country is dedicated to substitute the depreciated machines. Thus reaching a constant growth.
[4] It is considered exogenous due to the difficulty of calculation the technology parameter

Capital/Labor at the same rate. Which means that the growth rate is going to be lower (the percentage of new machines that are going to be used for new production will be smaller as time passes). This will end the moment we are forced to use the whole savings of the population into substituting machines and keeping the ratio stable. When we reach this point/state Solow argues that growth will be equal to the rate of technological change. In other words, we are not able to accumulate more capital so the only way to increase the growth rate (more production) is to improve the machines, so they are more productive than the last ones.

One important question regarding development is if poor countries are able to catch or converge with the rich. Robert Solow's answer is yes, a conditional yes. Countries will be able to catch the rich ones as long as they have the same saving rate, depreciation rate, population and more important they share the same technology (Aghion and Hewitt 2009, 29). The Mankiw-Romer-Weil model presented in 1992 challenges this positive conclusion. It considers that this convergence should not be taken as a given.

Mankiw, Romer and Weil accept the Solow model as the reference but criticize the conclusions regarding the weight that labor and savings have in the economy. They introduce a third factor in the Solow equation: Human Capital (the workers are more prepared because they can learn). The authors argue that Human Capital is correlated with these two factors *"*for any given rate of human-capital accumulation, higher savings or lower population growth leads to a higher level of income and thus a higher level of human capital*"* (Mankiw, Romer, and Weil 1990, 2) The novelty that their paper introduces is the existence of multiple steady states where the different countries are going to end. A poor country will not necessary converge with the rich ones but rather this poor country will reach a certain steady state, the one that matches the level of human capital, population growth and the saving rate of the country. After it reaches the first steady state, which can be broken if this country raises the saving rate which will be translated into a higher level of human capital.

To summarize what this model tries to do is explain how human capital plays a role in increasing the effect of capital accumulation in the economy (skilled workers are much more productive that unskilled workers). It also defends Solow conclusion regarding the existence of steady states, a thing that the endogenous growth models eliminates, because the latter claim that diminishing returns of capital are offset by the increase and change of the technological rate.

2.2 Endogenous Theories

The neoclassical growth theory (Solow Model) makes a great job in explaining the early stages of growth (capital accumulation) but it lacks of a strong explanation for the long run because it considers technology as exogenous. This is the claim of the Endogenous Models.

The AK Model developed by Marvin Frankel is considered one of the earliest if not the first endogenous model. It tries to explain the endogeneity of technology using the Learning by doing process developed by Kenneth Arrow in 1962. Learning by doing (Lbd from now on) consists in a bunch of small firms that pay K and L to their marginal product (competitive equilibrium). But these firms get better and better in allocating the necessary resources every new time that they have to produce, they also know where they have to spend the money. The interesting part about this is that this process does not incentivize investing in new technology,

you do not get a special status (patent) that allows you to have a monopoly for at least a certain time. Going back to the AK model. The proponents of this model believed that the Lbd was able to reduce or even offset the effect of diminishing returns of capital. Easy to comprehend how Lbd could cause that: every time we produce, we get new knowledge on how to allocate resources or in which part of the process we can save money. To answer the question we made at the beginning: the AK model believes that the long run growth of a country is going to depend of savings and the allocation that a company can make (Aghion and Hewitt 2009, 48).

The AK model is thus able to give an explanation for the positive long growth of the economy. The accumulation of capital creates positive externalities (Aghion and Hewitt 2009, 66) (Lbd) that allow a positive long run growth (because these externalities offset the diminishing returns conditions set by the neoclassical model). The problem is that this model does not show a convergence between the poor and the rich countries (the model considers constant returns to scale). To give a compelling answer for this problem of explaining what is causing the long run growth of an economy Paul Romer in 1990 wrote a paper called Endogenous technological change.

The Romer Model (also called the product variety model) accepts that the long run growth is determined by the growth rate of technology (Whelan 2014, 1). Nevertheless, while Robert Solow considered technology as something given, Paul Romer tries to explain what is causing a growth of technology. One of the main criticism of Paul Romer is that the older models tend to neglect the role that the private firms play in research and investing; "The second premise is that technological change arises in large part because of intentional actions taken by people who respond to market incentives" (Romer. 1989, 4). To solve this, Paul Romer introduces a monopolistic scenario where companies that invest in research, are allowed to enjoy being a monopoly at least for a certain period of time. In this period of time, this company will have profits as a reward and also as an incentive to invest more in research. The summary of the model is: we will have some companies specialized in creating designs "plans" for new products (inputs); to incentivize the investing and research for new products, these companies will enjoy imperfect competition in order to get profits (they become price-setters).

The interesting thing about these "plans" is that Paul Romer considered them non-rival and partially excludable. Why? He argued that the monopoly was only awarded if a company wanted to produce the intermediate product, if another company or researcher just wanted to study them to see if they could improve or create another product they were free to do that. One of the assumptions of Paul Romer was that the pool of knowledge "all of the designs created through history" should be non-excludable and non-rival, everyone should have access to this pool. Moreover, the progressive increase in the number of intermediate products available would cause labour to specialize more thus increasing productivity (more benefits for the company). The outtake is that the economy will grow in the long run as the same rate as these research companies are able to produce new designs for the intermediate products. The role of the private companies in researching and creating technology is far more important than the one given by the older models.

Phillipe Aghion and Peter Howitt in 1992 challenged one of the assumptions of the Romer model: that even though the economy produces new intermediate products, these "new" products are not considered substitutes of the old ones. In short, they challenged the idea that the old products continue to be used by companies, that there is no "creative destruction" (Schumpeter) or obsolescence. In their Schumpeterian model, the authors claim that the innovations that cause the long run growth should render obsolete, the products that were created before. In this model Phillipe Aghion and Peter Howitt included the possibility that the firm or entrepreneur could fail to create a better product. Meaning that technology could not grow for a year .This means that the long run growth rate of the economy in this model will be equal to the growth rate of technology the years that the firms are able to create a new product.

Again this model supports the role that the patents play in incentivizing research which in the end translates into greater growth of the economy. In terms of convergence, what this model says is that if a poor country is able to implement what is considered the latest technology, the effects in the economy will be much higher that if a developed country implements the same technology (Aghion and Howitt 2009, 92).

3. Non-economic Factors

The literature of economic development also includes authors that underline the importance of non-economic factors. We can distinguish two main types of non-economic factors: the institutional and the geographic.

3.1. The institutional factors

The endogenous models accept that institutions can play a role in helping the growth of the economy in a country. We see it on the product variety and Schumpeterian models, how patents and property rights incentivize research thus making the economy growth. Other authors have gone further and claimed that institutional factors can cause development. These models usually accept the definition of institutions proposed by Douglass North in 1981: "a set of rules, procedures and moral and ethical norms designed to constraint the behavior of individuals in the interest of maximizing the wealth or utility of principals*"*(Glaeser et al. 2004, 275). In other words, institutions are the rules of the game that create obligations for the individual to fulfill in the interest of society as a whole.

Already in 1960, Seymour Lipset argued that a richer nation has a higher chance of maintaining and improving the level of institutions. The author specifically mentions the level of education as vital for the development of good institutions inside the country even though he also includes urbanization and industrialization as important. Seymour Lipset argued that an educated population is less likely to support extremist ideas and to support the democratic ones. He also mentions that literate citizens are less likely to get into fights, wars and conflicts. Unless a country is able to develop good institutions, it will suffer from "imbalances which tend to accelerate social disorganization" (Lipset 2013, 81). In other words, if we have big cities full of illiterate people (normally rejected by society) there is a high chance that groups that want more political power (oligarchs) will take advantage of them. As a result, Seymour Lipset supports some redistribution to increase the wellbeing of the lower classes. He argues that if we increase the

welfare, the "poor" people will be less seduced by the extremists and more willing to participate in the decisions (voting in the elections).

While education (human capital) plays a role in calming and making the population more willingly to participate in the institutions, dictatorships can implement reforms to improve education. For Seymour Lipset, democracy can survive only in rich countries. Even if we force democracy into poor countries, the internal situation of the country (illiteracy, lack of wealth redistribution, etc) will not allow democracy to succeed.

In 2004, Daron Acemoglu, Simon Johnson and James Robinson in the paper *"Institutions as the fundamental cause of long-run growth"* argued that institutions shape the people living inside the country. We see that this is a departure from Seymour Lipset's view. The paper considers two types of institutions, economic and political. The argument is that the economic institutions (the ones that have a direct effect in the growth of the economy and the redistribution of wealth) depend on the political ones. Why? Because in case of conflict between two groups of the society, the ones that will obtain control of the economic institutions are the ones who have the more political power. The authors distinguish between *de jure* and *de facto* political power. The former being the classic institutions from where the power emerges (Parliament, constitution, justice) the latter being the power that can make the legal power crumble (money to buy mercenaries, media power or the ability to force the military). The origins of these two powers come from the political institutions for the *de jure* and the redistribution of wealth for the *de facto*. The percentage of the total wealth that is redistributed has a direct effect on the power to affect the institutions.

The summary of the theory is that the political institutions and the redistribution of wealth shape the political power of the country (*de jure and de facto)* and this political power shapes the political and economic institutions (the social class which benefitted in the last period will fight to maintain these institutions, while the others will fight to change it), that are in charge of redistributing the wealth and therefore will also shape the economic performance of the country that year. We see that this theory acknowledges the role of constraining the political powers and also opening those powers to the majority of the population in order to have better institutions. In other words, democracy will cause better economic institutions (and thus growth) than others form of government. As an appendix this theory gives major importance to the commitment problems, a problem that we will explore more profoundly in the following pages.

The last theory that we have to comment is the inclusive and extractive institutional model. This theory was proposed by Daron Acemoglu and James Robinson on its book "*Why nations fail"* (2012). This book introduces the theory that extractive and inclusive institutions played a vital role in shaping the future of the countries. The extractive institutions are characterized by the exploitation of the many by the few. In other words the majority of the population works for the benefit of the minority. The authors argue that this type of institutions can cause economic growth in the short run but in the long run they will fail, because, they are not prepared to assume the costs of the innovations carry as we have seen in the product variety model and also in the Solow-Swan model innovations in the different sectors will render obsolete many products. These innovations can cause unemployment or instability because the obsolete products will no longer be produced and thus the workers that produce them are more susceptible of

demanding political change. The oxymoron of this exclusive institutions are the inclusive ones, these types of institutions are based in the rule of the majority, and according to the authors these institutions might promote a smaller level of growth in the short run but on the other hand they deliver bigger growths in the long run, because they are better prepared to handle the "creative destruction" caused by technology.

3.2. The geographical factors

There is multitude of papers and theories regarding these factors. The chapter "Theories of root causes of economic progress," of the book by Sambit Bhattacharyya: *Growth miracles and growth debacles exploring the root causes* (2011) explains that as early as 1748 Montesquieu proposed a theory where hot climates affect negatively the brain thus eliminating motivation to prosper and develop. Another view inside this theory is the one proposed by John Gallup and Jeffrey Sachs (2000) who argued that the soils in hot places cannot grow as many plans due to a lot of biological problems (acidification, hot weather, humidity). Similarly, Jared Diamond (1997) argued that the different type of animals and plants present in the different areas of the world shaped the posterior development of those civilizations.

There are also debate on how illness affects economic growth. Jeffrey Sachs (2003) argues that Malaria affects economic growth through agricultural output in Africa. The illness reduces productivity thus making it impossible to have good product to sell which causes a lack of market development which reduces the possibility of growth. Daron Acemoglu et al (2004), however, considers that the negative impact of Malaria in economic growth comes from its influence in the *de facto power* of the country, making it more probable for that country to have bad institutions that will cause less economic growth.

4. Conclusion

This chapter shows that a perfect or unique way to develop a country does not exist. We have a variety of imperfect ways that can work. The economic literature on economic growth allows to differentiate between explanations that support a primary role of the economic factors (K,L and A) vs the ones that support a more human role (Geography, Institutions, Illness...).

In the area of the economic factors, there is consensus that technology affects the development of a country both in the short and long run. The problem is the discussion of the generation of this technology. Robert Solow and his followers would argue that technology is created exogenously because we do not have the tools to calculate it. While Paul Romer, Joseph Schumpeter, Kenneth Arrow and a bunch of other authors would say that technology is the consequence of education and a will to improve life on earth in every period of history. Another important source of discussion in this field is about the convergence topic. Here Robert Solow argues that a conditional convergence exists between rich and poor countries (In this topic, the followers of Solow: Mankiw-Romer-Weil recognize that sometimes, convergence will not occur). While the endogenous authors argue that with constant or even increasing returns this is not possible at any case.

It might look that discussions only occur in the "economic" area but in the "human" area we also find discussions and disagreements. Regarding institutions, the debate is about the type of political power that can create good institutions. Seymour Lipset argues that the person in power can create the proper institutions to fuel growth and these institutions will start evolving into democracy due to the presence of educated individuals in bigger numbers in the society. On the other hand, Daron Acemoglu et al argue that only institutions that are controlled by the majority of the society are capable to implement the necessary institutions.

IV. METHODOLOGY

Chapter one has showed that there are different ways to establish which countries are developed or developing. Three of the main IEOs used different methods to establish their classifications leading to some countries being considered developing in one classification and developed in the other. Chapter two indicates that there are also different ways to explain why countries developed. A review of the economic literature shows that there are several possible explanatory factors.

The objective of this chapter is to explain and justify the methodology used to test the hypothesis that democracy has positive effects in the growth of the income. The first section justifies the selection of Mauritius as case study. The second section explains both the quantitative analysis and the qualitative one. For the quantitative analysis we will use a basic Vector Auto Regression (VAR) model, while for the qualitative analysis we compare the VAR results to the economic history of Mauritius.

1. The case study

We propose a methodology based on the analysis of a case study: Mauritius. Various reasons justify the selection. The first is that the ultimate objective of this research is to establish whether the countries of the African continent have an economic interest in fostering democracy. Therefore, it makes sense to select as case study an African country. The second reason has to do with the need to test whether there was a relation between development and democracy implied in the hypothesis. To be able to establish the presence of that relation we need a country which is both developed (at least from African standards and taking into account all three IEOs definitions of development) as well as democratic. Mauritus is one of the few to comply with both conditions. It is ranked as a high human development country by the UNDP (see Table 1). The WB ranks Mauritius as an Upper Middle-Income country but according to its more recent data the country is closing the gap with the countries considered High Income (see Table 1). We also see that the IMF ranks Mauritius as the second country with the highest GDP per capita in the whole African continent. Finally, The Economist democracy index[5] ranks Mauritius as the most powerful and stable democracy in Africa, it ranks the 18th in the world. According to this index, the Mauritius democracy is more powerful and free than the Spanish 19th and French 20th democracies.

What we want to test with this case study is whether democracy has a positive or negative (maybe neutral) effect in the growth of the country. Or maybe it is for other reasons that the country is able to develop.

Hypothesis H_0: Democracy has a negative or neutral effect.

Hypothesis H_1: Democracy has a positve effect on the economic development of a country.

[5] The Economist democracy index *"is based on five categories: electoral process and pluralism; the functioning of government; political participation; political culture; and civil liberties. Based on its scores on a range of indicators within these categories, each country is then itself classified as one of four types of regime: "full democracy", "flawed democracy", "hybrid regime" or "authoritarian regime"".*

Table 1: Classification of the countries in the African continent according to the criteria of the World Bank, IMF and the UNDP.

UNDP		WORLD BANK			IMF
	Human Development Index (HDI)		Income Group		GDP per Capita* (Current prices)
Country	Value	Country		Country	
	2017				2019
HIGH HUMAN DEVELOPMENT		HIGH INCOME			
Seychelles	0,797	Seychelles	High income	Seychelles	31808,941
Mauritius	0,790	UPPER MIDDLE INCOME		Mauritius	25029,41
Lebanon	0,757	Algeria	Upper middle income	Equatorial Guinea	21441,148
Algeria	0,754	Lebanon	Upper middle income	Gabon	19158,805
Tunisia	0,735	Libya	Upper middle income	Botswana	18653,684
Botswana	0,717	Botswana	Upper middle income	Algeria	15765,504
Libya	0,706	Equatorial Guinea	Upper middle income	Lebanon	15208,308
Gabon	0,702	Gabon	Upper middle income	Egypt	14028,032
MEDIUM HUMAN DEVELOPMENT		Mauritius	Upper middle income	South Africa	13865,192
South Africa	0,699	Namibia	Upper middle income	Tunisia	12800,789
Egypt	0,696	South Africa	Upper middle income	Libya	12050,582
Morocco	0,667	LOWER MIDDLE INCOME		Namibia	11369,129
Cabo Verde	0,654	Djibouti	Lower middle income	Eswatini	11088,686
Namibia	0,647	Egypt, Arab Rep.	Lower middle income	Morocco	9283,757
Congo	0,606	Morocco	Lower middle income	Cabo Verde	7727,277
Ghana	0,592	Tunisia	Lower middle income	Congo, Republic of	7118,806
Equatorial Guinea	0,591	Angola	Lower middle income	Ghana	6998,311
Kenya	0,590	Cabo Verde	Lower middle income	Angola	6763,355
Sao Tome and Principe	0,589	Cameroon	Lower middle income	Nigeria	6098,342
Eswatini (Kingdom of)	0,588	Comoros	Lower middle income	Côte d'Ivoire	4454,104
Zambia	0,588	Congo, Rep.	Lower middle income	Mauritania	4200,906
Angola	0,581	Côte d'Ivoire	Lower middle income	Zambia	4176,654
Cameroon	0,556	Eswatini	Lower middle income	Sudan	4088,712
LOW HUMAN DEVELOPMENT		Ghana	Lower middle income	Djibouti	3999,252
Tanzania (United Republic of)	0,538	Kenya	Lower middle income	Cameroon	3964,646
Zimbabwe	0,535	Lesotho	Lower middle income	Kenya	3868,628
Nigeria	0,532	Mauritania	Lower middle income	Senegal	3863,555
Rwanda	0,524	Nigeria	Lower middle income	Tanzania	3573,466
Lesotho	0,520	São Tomé and Principe	Lower middle income	Lesotho	3564,386
Mauritania	0,520	Senegal	Lower middle income	São Tomé and Príncipe	3441,343
Madagascar	0,519	Sudan	Lower middle income	Gambia, The	2903,116
Uganda	0,516	Zambia	Lower middle income	Uganda	2621,886
Benin	0,515	Zimbabwe	Lower middle income	Zimbabwe	2620,361
Senegal	0,505	LOW INCOME		Benin	2561,936
Comoros	0,503	Benin	Low income	Ethiopia	2516,666
Togo	0,503	Burkina Faso	Low income	Chad	2505,22
Sudan	0,502	Burundi	Low income	Mali	2473,837
Côte d'Ivoire	0,492	Central African Republic	Low income	Rwanda	2444,085
Malawi	0,477	Chad	Low income	Guinea	2429,103
Djibouti	0,476	Congo, Dem. Rep.	Low income	Yemen	2404,354
Ethiopia	0,463	Eritrea	Low income	Burkina Faso	2095,573
Gambia	0,460	Ethiopia	Low income	Guinea-Bissau	2025,291
Guinea	0,459	Gambia, The	Low income	Togo	1820,515
Congo (Democratic Republic of th	0,457	Guinea	Low income	Eritrea	1717,739
Guinea-Bissau	0,455	Guinea-Bissau	Low income	Sierra Leone	1701,039
Yemen	0,452	Liberia	Low income	Madagascar	1698,33
Eritrea	0,440	Madagascar	Low income	Comoros	1662,405
Mozambique	0,437	Malawi	Low income	South Sudan, Republic of	1613,095
Liberia	0,435	Mali	Low income	Liberia	1413,006
Mali	0,427	Mozambique	Low income	Mozambique	1331,104
Burkina Faso	0,423	Niger	Low income	Niger	1279,623
Sierra Leone	0,419	Rwanda	Low income	Malawi	1234,01
Burundi	0,417	Sierra Leone	Low income	Congo, Dem. Rep. of the	791,19
Chad	0,404	Somalia	Low income	Central African Republic	746,464
South Sudan	0,388	South Sudan	Low income	Burundi	726,885
Central African Republic	0,367	Tanzania	Low income		
Niger	0,354	Togo	Low income		
OTHER COUNTRIES OR TERRITORIES		Uganda	Low income		
Somalia	..				
Human development groups		**Income Groups**	**GNI/n using the atlas method**	*GDP per capita, current prices (Purchasing power parity; international dollars per capita)	
Very high human development	0,894	High Income	12.375$ or More		
High human development	0,757	Upper Middle Income	3.996-12.375		
Medium human development	0,645	Lower Middle Income	1.026-3.995		
Low human development	0,504	Low Income	0-1.026		
Source: UNDP		Source: World Bank		Source: IMF	

2. Methods of analysis

To test the hypothesis that democracy has a positive effect on the economic development of a country, we propose to study the case of Mauritius, an African country which is both more developed and democratic than the rest. To do so, first we will perform the quantitative analysis (Granger Causality using the Toda and Yamamoto approach) But we will not say if the hypothesis is rejected or not, because first we want to perform the next step. The next step will consist in analyzing the country using the qualitative analysis (Historical, Political and also economic). After performing this analysis we will compare the results we get with the ones obtained by the quantitative analysis and then we will say if we reject or not the hypothesis.

2.1 Quantitative Analysis

The period under analysis is 1968-2012. The reason for this is that Mauritius gained its independence in 1967, meaning that it is not in our best interests to use the data before that. Nowadays apart from the French islands that are under control of France, the other African countries are independent.

In this analysis we use three variables: two for democracy and one for growth. The latter variable in play is GDP per capita. GDP divided by the population of the country. The first democracy variable is the variable liberal democracy from the database v-dem. V-DEM is the database of a project whose main objective is to measure the value of democracy through the history of mankind. This variable includes the restrictions that citizens place in the government power, the degree that the civil liberties are protected by the constitution, a measure of the independence of the judicial system, another measure of how strong the rule of law is and also includes the score of how clean are the elections in that country. Score of the variable (zero-one). One being the highest, zero being the lowest score. The score can adopt any number between zero and one.

The second democracy variable comes from the same database v-dem but from another source: Polity IV. The variable name is called e_democ. Essentially it measures the same as the liberal democracy. Score (zero-10) without decimals. 10 being the highest, zero being the lowest. The reason that we use two variables that are essentially the same is to check if the results of the test might differ or not.

To analyze the possible effects between democracy and GDP per capita. We will realize a Granger causality test. The main idea of this test in words of Helmut Lütkepol in it is book "*New Introduction to Multiple Time Series Analysis"* (2005) is the following: *"*cause cannot come after the effect. Thus, if a variable x affects a variable z, the former should help improving the predictions of the latter variable*"*. In other words, with this test what will find is what variable comes before in the times series (StatisticsHowTo). It is not technically causality, but we will complement it with the qualitative analysis.

We will use the Toda and Yamamoto (1996) approach to test for Granger Causality. We will use this approach because it allows to create and test the different variables in levels instead of having to take differences. As Mavrotas and Kelly puts it: "it is possible that incorrect inferences could be made about the issue of causality simply because of the sensitivity of stationary

or cointegration tests.*"* (2001, 100) We will test for the order of integration because the basis of this approach is to use the order of integration number as a lag for the VAR. The Vector Auto regression or VAR is a vector formed by different time series using the same model. This procedure is to solve the problems that might arise when using the Wald test to test for Granger non-causality (Some authors do not make difference between Granger non causality and Granger causality)

Granger-Causality Hypothesis

Hypothesis H_0: past values of X doesn't granger cause present values of Y

Hypothesis H_1: past values of X granger cause present values of Y

We follow the six steps identified by Dave Giles in its blog (2011) necessary to perform the Granger Causality test:

1st Perform an Augmented Dickey Fuller test to check for the order integration[6] and also see if the variable is stationary[7] or not. When testing for this, we only care about two things. The first one is seeing if the two variables analyzed in each case (liberal democracy/GDP per capita and Polity IV democracy/GDP per capita) share the same order of integration, because if they do we will need to test for cointegration. The other one is to see what variable has the highest order of integration, because we will add the same number of lags to our VAR as the highest order of integration that we find in our variables (if we have one variable that is integrated of order zero and another one that is integrated of order one, we will add one extra lag to our VAR)

2nd Then we need to perform the Engle-Granger test, to check for cointegration[8]. The reason to do this test is that if the variables are cointegrated. We want to check for integration due to rule related to the Granger Causality test that says the following: If we have cointegration we will find either unidirectional or bidirectional granger causality between any of the variables being tested. In other words, if we have cointegration we will have Granger causality

3rd We need to choose the appropriate number of lags for the VAR. For this we will use different information criteria (AIC, Hainan-Quin, Schwartz). We will choose the lag that presents the lowest loss of information (Lower number in the different information criteria)

4th After choosing the appropriate number of lags for the VAR, we will need to test for the normality in the residuals. The reason behind is that if the residuals are correlated, then some of the causality power is hidden behind the residuals. Which means that the results that the Granger Test give would be incorrect, or we would end rejecting when we do not have to reject.

[6] The order of the Integration is the number of times that we have to differentiate a variable to make it stationary.
[7] Stationarity is the concept that happens when a time series variable is able to keep constant overtime all of its main characteristics (mean, variance and autocorrelation). Thus allowing a better forecasting.
[8] According to StatisticsHowTo two variables are cointegrated if *"a linear combination of those variables has a lower order of integration. For example, cointegration exists if a set of I(1) variables can be modeled with linear combinations that are I(0)"*

5th After completing all of the tests and seeing how everything is normal, we will build the VAR model. We will use the following formula:

Source Dave Giles

$$Y_t = a_0 + a_1 Y_{t-1} + \ldots\ldots + a_p Y_{t-p} + b_1 X_{t-1} + \ldots\ldots + b_p X_{t-p} + u_t \quad (1)$$

$$X_t = c_0 + c_1 X_{t-1} + \ldots\ldots + c_p X_{t-p} + d_1 Y_{t-1} + \ldots\ldots + d_p Y_{t-p} + v_t \quad (2)$$

The number of lags that we will use will depend on the highest order of integration and also on the different information criteria.

6th After building the VAR we can proceed with the Granger testing. As mentioned before, when we test for the Granger causality in the test the number of degrees of freedom will match the number of lags that the information criteria gives. In the test we will not use the number of lags coming from the order of integration, those are only there to solve the problems that arise when testing non-stationary series using a normal Wald test.

2.2 Qualitative Analysis

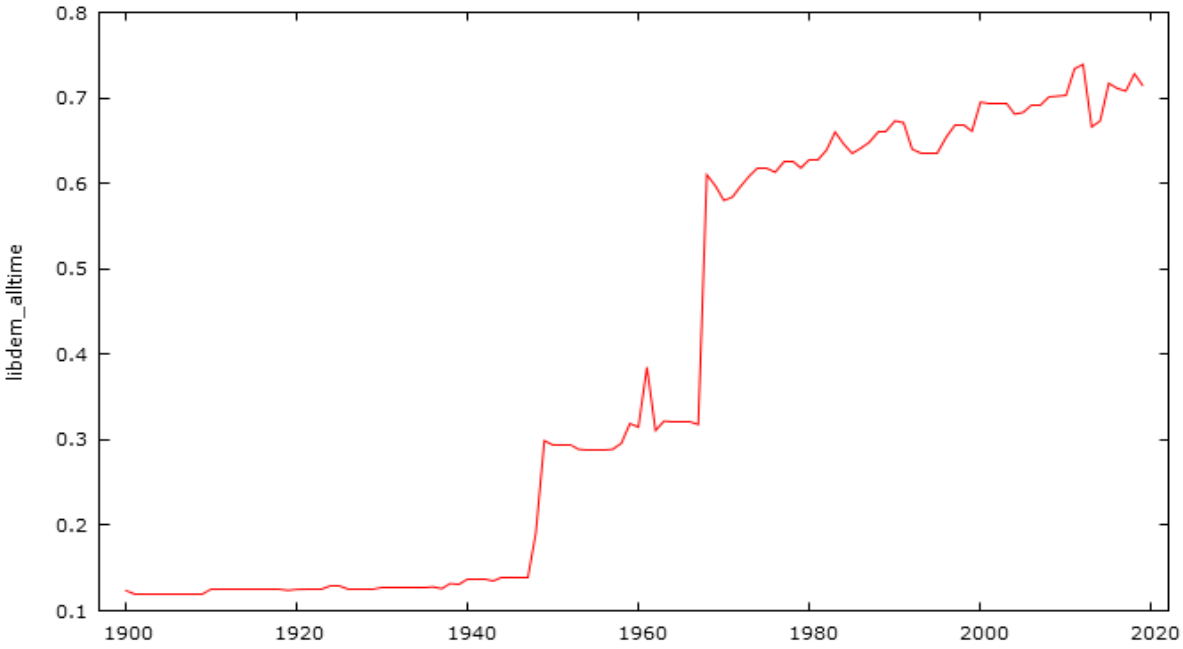
This analysis is broader in terms of time than the quantitative one to try to capture historical factors and to compare them with Acemoglu et al theory (that is, we look at the presence of non-economic factors). Taking the total length of our time series plot for democracy (variable lib_democracy from the database v-dem) of around 119 years (1900-2019) as presented in Graph three, we can distinguish four periods of interest.

The first period should cover the years that preceded the 1936 (including those before 1900). We want to know how the events that happened from the discovery of the island till the 1936 helped in creating the proper environment for the development of the island. The second period is the one around the first big spike on democracy in 1947. We will try to discover what happened in the island at that time in 1947 (the first big spike). The third period is constituted by the years around the biggest spike in 1967, when Mauritius gained independence from the United Kingdom. The fourth period will help us obtain a picture of what is Mauritius today

The sources that we have used for this analysis are three: book, papers and article from the internet. The book title is *"why nations fail"* (2012), this book give us an insight on how the different institutions shape the growth of a country which we will use it for the analysis. For the papers we have done a search through JSTOR and google scholar. We have used different papers to explain the periods due to the inexistence of a single book that explains the political and economic history of Mauritius. For the first period (1638-1900) we use the paper named *"Slaves, Freedmen and Indentured Laborers in colonial Mauritius"* by Richard Allen (1999) and the article "*Role of Indians in Mauritius"* by Kauleshwar Rai and Kayleshwar Rai (1983). This paper and article explains really well from the political and economic view, the first years of Mauritius as a colony. For the second period we use the article titled *"BRITISH COLONIAL POLICY, LOCAL POLITICS, AND THE ORIGINS OF THE MAURITIAN WELFARE STATE, 1936—50"* by Jeremy Seekings (2011). This article is more centered in the political history. For the third period (1966-1968) we use the article titled "*Institutions, Economic Reform, and Democratic Consolidation in Mauritius"* by Deborah Bräutigam (1997) and the paper named *"Mauritius Independence and Dependence"* written by Jean Houbert (1981). This paper and article provides us with a really good insight of what was Mauritius

during those periods. For the last period (independence-nowadays) we have selected the paper *"Origins of the Democratic Developmental State: Interrogating Mauritius"* by Richard Sanbrook (2005). This papers starts analyzing the country from the independence up until the 21st century

Graph 1: Time series plot of the liberal democracy variable (1900-2019)



5. Conclusion

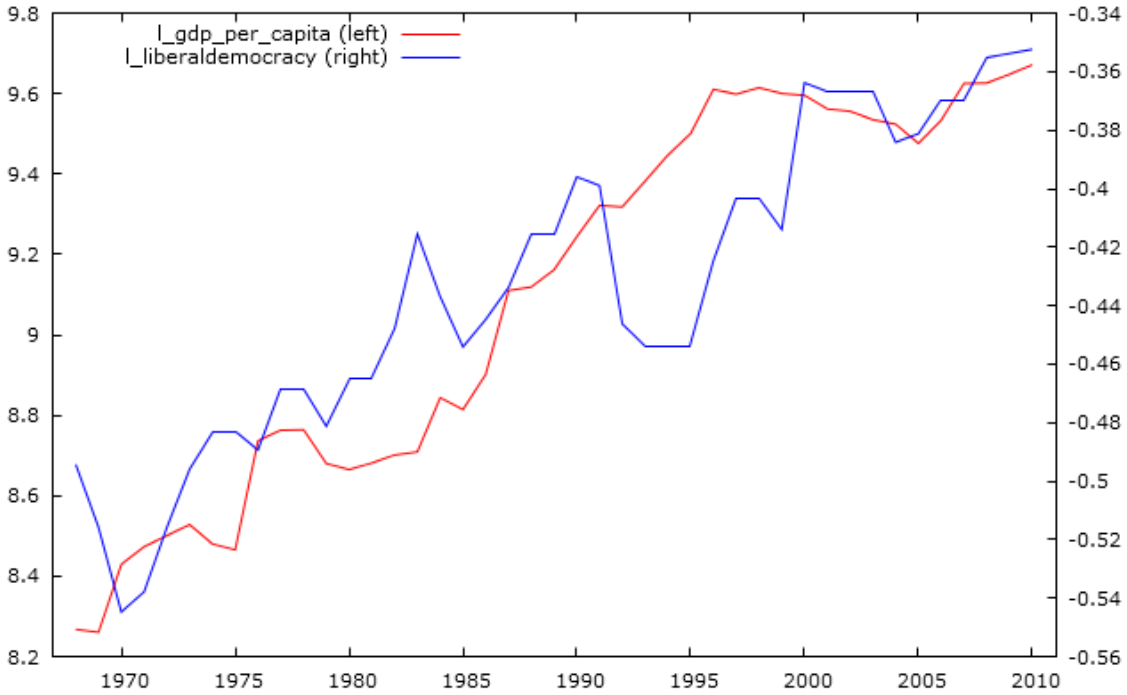
To test the hypothesis that democracy has a positive effect on the economic development of a country, we propose to study the case of Mauritius, an African country which is both more developed and democratic than the rest. To do so, first we will perform the quantitative analysis (Granger Causality using the Toda and Yamamoto approach) But we will not say if the hypothesis is rejected or not, because first we want to perform the next step. The next step will consist in analyzing the country development using a qualitative analysis (Historical, Political and also economic) and looking for the presence of non-economic factors. After performing this analysis, we will compare the results we get with the ones obtained by the quantitative analysis and then we will say if we reject or not the hypothesis.

V. RESULTS OF THE QUANTITATIVE ANALYSIS

1. Introduction

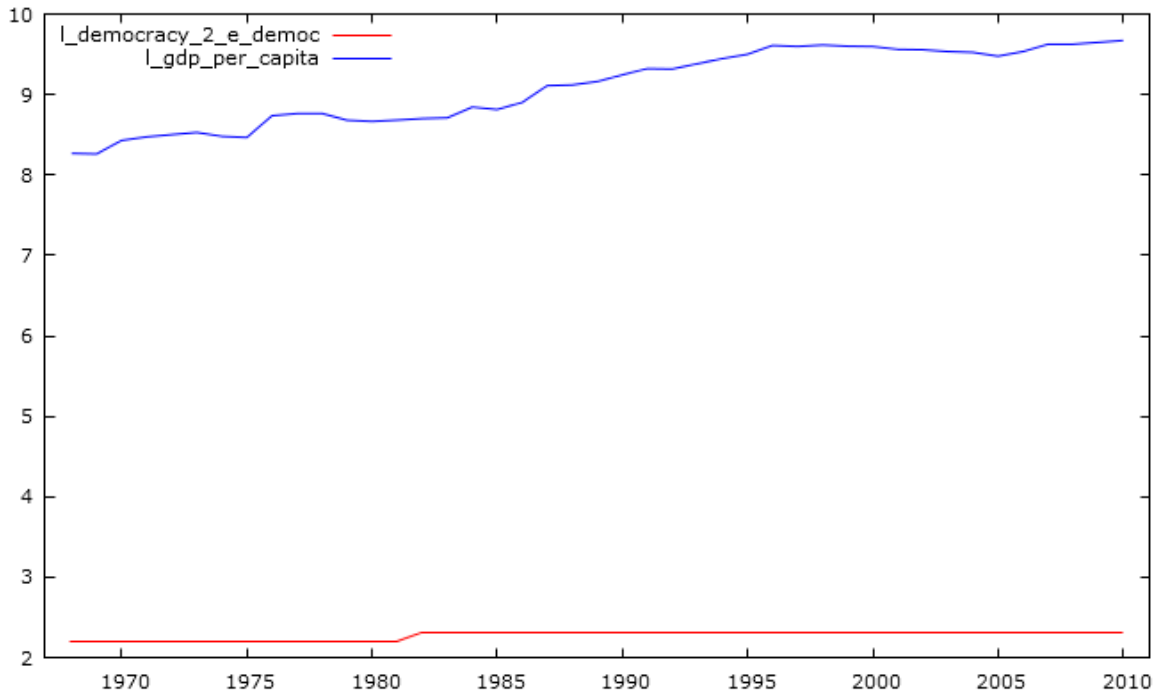
This chapter present the results obtained from the quantitative analysis. We will be using the variables in logs. The difference in the scale of which the variables are measured is quite big. Thus measuring in logs will help reduce the extremes and also have a better picture.

Graph 2: Time series plot of the log gdp per capita against the log of liberal democracy.



This is a first step in order to know if democracy is helping GDP per capita grow or maybe is GDP the one helping democracy (As we get rich we demand more rights). We see that the variables are moving to the same direction, what we need to do know is check whether they are stationary or not. We also need to check if the variables are cointegrated, in the case of the variables having the same order of integration.

Graph 3: Time series plot of the log GDP/Polity IV scale of democracy



If we look at this plot we might think that there is no correlation or anything that relates these two variables but that is not true. The main difference between the two plots, is that in this one the variable democracy is a discrete one (can only take values that go from one-10 with no decimals) but this does not mean anything. We see in this plot that in 1982, Mauritius grade was raised from a nine to a 10, but we did not see the effect of this in the GDP per capita until three years after.

2. ADF test

As explained in the methodological chapter, the first step to perform the Granger Causality test: is to determine the order of integration. We do that by performing an ADF test on the three variables. The first thing that we have to do is test if the variables are integrated of order two or in the other hand are integrated of order one or zero.

Hypothesis H_0: Variable I(2)

Hypothesis H_1: Variable I(1) or Variable I(0)

We find that all of the three variables present p-values lower than the significance level (5%) which means that we reject the null hypothesis that the variables are integrated of order two. We thus perform the test again but in the null hypothesis we have that the variable is integrated of order one and in the alternative, we put that the variable is integrated of order zero.

Hypothesis H_0: Variable I(1)

Hypothesis H_1: Variable I(0)

Table 2: ADF Liberal Democracy.

```
Augmented Dickey-Fuller test for l_liberaldemocracy
testing down from 3 lags, criterion AIC
sample size 41
unit-root null hypothesis: a = 1

  with constant and trend
  including one lag of (1-L)l_liberaldemocracy
  model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + ... + e
  estimated value of (a - 1): -0.505829
  test statistic: tau_ct(1) = -3.7805
  asymptotic p-value 0.01748
  1st-order autocorrelation coeff. for e: -0.056
```

Table 3: ADF GDP per capita.

```
Augmented Dickey-Fuller test for l_gdp_per_capita
testing down from 3 lags, criterion AIC
sample size 42
unit-root null hypothesis: a = 1

  with constant and trend
  including 0 lags of (1-L)l_gdp_per_capita
  model: (1-L)y = b0 + b1*t + (a-1)*y(-1) + e
  estimated value of (a - 1): -0.123282
  test statistic: tau_ct(1) = -1.47749
  p-value 0.8216
  1st-order autocorrelation coeff. for e: 0.061
```

Table 4: ADF Polity IV democracy.

```
Augmented Dickey-Fuller test for l_democracy_2_e_democ
testing down from 3 lags, criterion AIC
sample size 42
unit-root null hypothesis: a = 1

  test without constant
  including 0 lags of (1-L)l_democracy_2_e_democ
  model: (1-L)y = (a-1)*y(-1) + e
  estimated value of (a - 1): 0.00107155
  test statistic: tau_nc(1) = 0.968065
  p-value 0.909
  1st-order autocorrelation coeff. for e: -0.025
```

In this new ADF test we find that the variables give out different results. According to this test in the case of the liberal democracy we find that the variable is I(0), in other words, we reject the null hypothesis. While GDP per capita and Polity IV democracy do not reject the null which means that the variables are integrated of order one. Which means that we will have to perform a co-integration test to see if the variables are cointegrated.

3. Cointegration test

To test if the variables Polity IV and GDP per capita we will use the Engle and Granger test. This test consists in the following steps:

1st: We need to create a model that we will use in the OLS regression. In our case the model is the following.

$$lGDPpercapita = \beta + \beta lPolityIV + \varepsilon_{it}$$

2nd: With this model we create an OLS regression, from this OLS regression we save the residuals because the order of integration of the residuals tell us if we have a cointegrating relationship. This happens when the residuals have an order of integration I(0). To check the order of integration of the residuals, we will need to make and ADF test where the null hypothesis is that the residuals are integrated of order one (no cointegration) while the alternative is that the residuals are integrated of order zero (cointegration).

Table 5: Engle and Granger Cointegration Analysis (Polity IV, GDP per capita).

```
Step 1: cointegrating regression

Cointegrating regression -
OLS, using observations 1968-2010 (T = 43)
Dependent variable: l_democracy_2_e_democ

                    coefficient   std. error   t-ratio    p-value
  ------------------------------------------------------------------
  const               1.47080     0.0871922    16.87     4.72e-020 ***
  l_gdp_per_capita    0.0876925   0.00957553    9.158    1.82e-011 ***

Mean dependent var   2.268282   S.D. dependent var   0.049955
Sum squared resid    0.034415   S.E. of regression   0.028972
R-squared            0.671655   Adjusted R-squared   0.663647
Log-likelihood       92.29079   Akaike criterion    -180.5816
Schwarz criterion   -177.0592   Hannan-Quinn        -179.2826
rho                  0.819460   Durbin-Watson        0.365972

Step 2: testing for a unit root in uhat

Augmented Dickey-Fuller test for uhat
testing down from 8 lags, criterion AIC
sample size 42
unit-root null hypothesis: a = 1

  model: (1-L)y = (a-1)*y(-1) + e
  estimated value of (a - 1): -0.18054
  test statistic: tau_c(2) = -1.99363
  p-value 0.5372
  1st-order autocorrelation coeff. for e: 0.095

There is evidence for a cointegrating relationship if:
(a) The unit-root hypothesis is not rejected for the individual variables, and
(b) the unit-root hypothesis is rejected for the residuals (uhat) from the
    cointegrating regression.
```

We see that the ADF test for the residuals gives a p-value of 0.54 which is way higher than 5%. This p-value means that we do not reject the null hypothesis which means that the residuals are

integrated of order one. These two variables are not cointegrated. The reason we are so interested in testing for cointegration, is due to the fact that having cointegration assures causality either one or both ways. But not finding it does not mean that causality is over. We can have causality without cointegration.

4. VAR lag selection

After checking for the order of integration and cointegration, the next step is to build the Vector Auto Regression model that we will use for our Granger non-causality test. To build the VAR we need to select the lags that we will use in the model. To do that we will use the different information criteria available. We will choose the number of lags that presents the lower loss of information (the smallest number).

Table 6: VAR lag selection Liberal democracy/GDP per Capita.

VAR Lag Order Selection Criteria
Endogenous variables: LGDP_CAPITA LLIB_DEM
Exogenous variables: C
Date: 08/24/20 Time: 19:10
Sample: 1968 2010
Included observations: 35

Lag	LogL	LR	FPE	AIC	SC	HQ
0	63.63393	NA	0.000101	-3.521939	-3.433062	-3.491259
1	140.5300	140.6099*	1.57e-06*	-7.687426*	-7.420795*	-7.595385*
2	140.8400	0.531575	1.95e-06	-7.476574	-7.032189	-7.323172
3	142.3970	2.491167	2.26e-06	-7.336973	-6.714833	-7.122210
4	144.5161	3.148318	2.54e-06	-7.229490	-6.429597	-6.953367
5	146.4713	2.681426	2.92e-06	-7.112645	-6.134998	-6.775161
6	150.3804	4.914295	3.02e-06	-7.107451	-5.952049	-6.708606
7	154.7638	5.009632	3.09e-06	-7.129361	-5.796205	-6.669156
8	155.9000	1.168612	3.87e-06	-6.965712	-5.454803	-6.444146

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

According to the different information criteria (Akaike, Schwartz, Hainan) that we have in this test, the number of lags that we choose is one. For the VAR of liberal democracy and GDP per Capita we have one lag plus another due to the fact that GDP per Capita is integrated of order one.

Table 7: VAR lag selection Polity IV/GDP per Capita.

VAR Lag Order Selection Criteria
Endogenous variables: LDEMOC LGDP
Exogenous variables: C
Date: 08/24/20 Time: 20:15
Sample: 1968 2010
Included observations: 35

Lag	LogL	LR	FPE	AIC	SC	HQ
0	58.79537	NA	0.000134	-3.245450	-3.156573	-3.214770
1	141.5683	151.3562	1.48e-06*	-7.746759*	-7.480128*	-7.654718*
2	143.2315	2.851300	1.70e-06	-7.613231	-7.168846	-7.459830
3	144.0140	1.251980	2.06e-06	-7.429373	-6.807234	-7.214611
4	150.1806	9.161818	1.84e-06	-7.553180	-6.753286	-7.277057
5	152.0377	2.546760	2.12e-06	-7.430723	-6.453076	-7.093240
6	152.8899	1.071449	2.62e-06	-7.250854	-6.095453	-6.852010
7	164.7790	13.58751*	1.74e-06	-7.701658	-6.368502	-7.241453
8	166.8959	2.177411	2.06e-06	-7.594054	-6.083144	-7.072488

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Here, we see that for the VAR model in this case build with the variables Polity IV democracy and GDP per capita. We also choose the one with only one lag plus another from the order of integration (Toda and Yamamoto p+m approach)

Before building the VAR model to test for the Granger non-causality, we need to test for serial autocorrelation of the residuals. The reason behind that is that residuals need to behave in a random way to have an optimum model. In the case that they do not do that, we would find ourselves in a scenario where the residuals have information from the past that could be important for our forecasts in the present. In other words, our testing would not be optimum because the residuals are hiding part of the causality. The Granger non-causality could give out wrong answers (RH0 when we should NRH0).

5. Residual autocorrelation

To test for this serial autocorrelation we use the residual serial correlation LM test. The hypotheses of this test are the following:

Hypothesis H_0: No serial correlation

Hypothesis H_1: serial correlation

Table 8: Serial Correlation Test GDP per capita/Liberal democracy.

VAR Residual Serial Correlation LM Tests
Date: 08/26/20 Time: 03:35
Sample: 1968 2010
Included observations: 41

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	7.710553	4	0.1028	2.012446	(4, 66.0)	0.1029
2	3.600806	4	0.4627	0.911027	(4, 66.0)	0.4628
3	4.617207	4	0.3289	1.177169	(4, 66.0)	0.3290

Null hypothesis: No serial correlation at lags 1 to h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	7.710553	4	0.1028	2.012446	(4, 66.0)	0.1029
2	9.382875	8	0.3110	1.203502	(8, 62.0)	0.3119
3	14.26526	12	0.2841	1.228238	(12, 58.0)	0.2867

*Edgeworth expansion corrected likelihood ratio statistic.

We choose three lags cause is the number that the program offers automatically. We see that the p-value of the first lag is higher than 0.05 (level of confidence). This means that we do not have to reject the null hypothesis of no serial correlation. Not rejecting the hypothesis means that we can use a VAR(with one lag) model plus another one of the order of integration. This was the model that the lag order selection criteria proposed.

Table 9: Serial Correlation Test GDP per capital/Polity IV democracy.

VAR Residual Serial Correlation LM Tests
Date: 08/26/20 Time: 04:00
Sample: 1968 2010
Included observations: 41

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	1.510818	4	0.8247	0.376294	(4, 66.0)	0.8248
2	3.317663	4	0.5061	0.837603	(4, 66.0)	0.5062
3	8.332339	4	0.0801	2.185048	(4, 66.0)	0.0802

Null hypothesis: No serial correlation at lags 1 to h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	1.510818	4	0.8247	0.376294	(4, 66.0)	0.8248
2	9.158236	8	0.3291	1.172612	(8, 62.0)	0.3300
3	13.80760	12	0.3132	1.184363	(12, 58.0)	0.3158

*Edgeworth expansion corrected likelihood ratio statistic.

For the VAR model that contains the GDP per capita and the democracy score according to Polity IV. We find the same result. The model proposed by the information criteria (one lag plus one more for the order of integration) is a good one because the model does not present serial autocorrelation in the residuals. The p-value for one lag is 0.8248 far bigger than 0.05. Meaning that we do not reject the null hypothesis of no serial correlation.

6. Granger Test

The last step of this quantitative analysis is to build the two VAR models to test the Granger non-causality. For the building of the VARs we use a normal one with one lag and another extra for the order of integration (two of the three analyzed variables are I(1)).

As the reader remembers, we are testing the Granger non-causality test proposed by Toda and Yamamoto. In this test the null hypothesis is that the variable: liberal democracy/Polity IV/GDP per capita does not granger cause the other variable being tested, while the alternative is that the variable granger causes the other.

Table 10: Granger Causality Test GDP per capita/liberal democracy.

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 08/27/20 Time: 03:30
Sample: 1968 2010
Included observations: 41

Dependent variable: LGDPPC

Excluded	Chi-sq	df	Prob.
LDEM	0.083928	1	0.7720
All	0.083928	1	0.7720

Dependent variable: LDEM

Excluded	Chi-sq	df	Prob.
LGDPPC	0.720936	1	0.3958
All	0.720936	1	0.3958

After performing the Granger non-causality test. We find the results summarized in Table 10. The values of p-values all of them are bigger than our 5% level of confidence, means that we do not reject the null hypothesis. If we remember from the beginning the null hypothesis is that the variable x does not granger cause the variable y. This means that neither GDP per capita or liberal democracy granger causes liberal democracy or GDP per capita.

Table 11: Granger Causality Test GDP per capita/Polity IV democracy.

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 08/26/20 Time: 19:05
Sample: 1968 2010
Included observations: 41

Dependent variable: LDEM_POLITYIV

Excluded	Chi-sq	df	Prob.
LGDP_PC	0.000789	1	0.9776
All	0.000789	1	0.9776

Dependent variable: LGDP_PC

Excluded	Chi-sq	df	Prob.
LDEM_POLITYIV	0.015709	1	0.9003
All	0.015709	1	0.9003

Unfortunately, in table 11,we find the same results as in the other granger test that we performed. The p-values are way bigger than our 5% level of confidence. Which means that we do not reject the null hypothesis of no granger causality.

7. Conclusion

From the results, we can see that none of the two democracy variables that we choose granger cause GDP per capita. However, this does not meant that we have to accept that democracy has a null or negative effect on the growth of country. We need to perform the qualitative analysis to have a definitive answer. Our justification comes from the definition of the test itself: *"*if X_1 "Granger-causes" (or "G-causes") X_2, then past values of X_1 should contain information that helps predict X_2 above and beyond the information contained in past values of X_2*"*(Scholarpedia). In the formula of creation for the democracy variables, the authors do not include GDP_per_capita. Which means that these democracy variables may not contain any residual of the effect that an increase of GDP per capita could have in the variables and values forming them. There might be no causality due to the way these variables are designed.

VI. RESULTS QUALITATIVE ANALYSIS

The objective of this chapter is to further test the value of the hypothesis that democracy has positive effects in the income growth of a country. The qualitative analysis allows for a study in depth of the economic, political and social evolution of Mauritius so as to test the Acemoglu et al (2012) thesis that democracy is a factor of development because it implies an inclusive rather extractive institutional model. As explained in the methodological chapter (chapter three) and also in chapter two, to carry out the analysis we have divided the history of the country into four periods taking into account the time plot of the variable lib_democracy. This chapter is thus divided into four sections, one for each of these periods.

1. First period (1638-1900)

The colonial power that tried to colonize Mauritius first was the Netherlands in 1638. The Dutch gave the name of Mauritius to the island, in honor of Maurice of Nassau (the commander in chief in the war against the Spanish). The original plan of the Dutch was to create a station of transit for the ships that where travelling from the Netherlands to the colonies located in East Asia (Indonesia). This plan failed due to the resistance that the native population put up against being colonized. The lack of willingness from the natives plus the lack of natural resources caused the Dutch to abandon the island in the early 1700's. This episode, from Daron Acemoglu et al perspective, is indication that Mauritius had development potential. Here we see the example of one of the theories proposed by Daron Acemoglu. Daron Acemoglu and James Robinson (2012) explain that the tribes that resist or do not get colonized, have a better chance of developing into richer countries or regions than the ones that get colonized. The reason behind is that countries that get colonized, have a greater chance of suffering from extractive institutions. Extractive institutions are created by the settlers as a method to extract all of the possible resources (natural or human) from the colonized country. The most common extractive institutions are: slavery, confiscation of land, stripping the native institution from its land, massive deforestation, and gigantic plantations of a single crop (sugar, bananas, tobacco…) Nevertheless, Mauritius was indeed colonized some years later.

After being abandoned for 10 years, in 1721 a group of French settlers from the French company of the Indies arrived at the island. They build a maritime base and a settlement (Port Louis) in the 1730's, Soon the base became a very important asset for the French empire. The role of the civil population during those years was to produce the products to maintain the French forces in the island (Allen, 1999). Probably one of the two most important dates during the French control is 1767. That is the year that the island control passed from the company to the French Kingdom. The first order of business of the new rulers was the creation of a plantation colony like the ones the Kingdom had in the Caribbean. This "plantation" colony failed due to a variety of reasons. The first one is that plantations were not profitable due to the competition with the colonies with bigger and better plantations that made nearly impossible to obtain good profits from that activity in the island. The second reason was the recurrent natural disasters (flooding and hurricanes mostly). The third reason were the profits that one could make in the sea (military/civil) due to the strategical location of Mauritius. The island is located between

India and Africa. In those times the biggest and busiest commercial route in the whole world. This was the route that the English and other European merchant ships used to get from Europe to East Asia and back. Obviously the French did not missed the chance of using the base as the port from where the naval forces could attack the ships of their biggest rivals at that time and also be used as a trade area for merchants of around the world.

In 1784 Port Louis was designated a free port for merchants of all around the world. The presence of Port Louis both as a base for the French army and also as a free port was so profitable for the French and so damaging for the British that the latter ended up invading and taking the control of the island in 1810. Four years later the two countries agreed in the Treaty of Paris, that the French would keep the control and sovereignty of the Reunion while the British obtained the control of Mauritius.

Here we see a good example for two theories. The first one is the geographical theory proposed by Jared Diamond. Mauritius provide a good example on how the natural disasters helped to prevent Mauritius from becoming a plantation colony. Another example is the location of Mauritius. This location in the middle of the biggest commercial route helped to provide other sources of income (trade and war) instead of the normal one that was the creation of a plantation economy. The other is the theory of Daron Acemoglu et al (2004) on how the decision made by an institution (the French governor) brought to the island fortune and prosperity. The decision was to made Port Louis a free port.

One of the requisites of France for giving Mauritius to the UK in the Treaty of Paris, was that settlers could stay and keep their properties that they could continue using the French language and also that in matters of justice, the settlers could use the French law. The social structure of Mauritius at the moment they got incorporated into the British kingdom, was fairly different from its other colonies. The bankruptcy of the French company of the Indies, allowed every French person the possibility of trading with other merchants or even the possibility of starting their own business. The designation of Port Louis as a free port accentuated the possibilities of becoming part of the bourgeoisie. Other important decision that helped to create this social structure was the decision adopted by the Company and also by the French Kingdom and posterior Republic to give out for free or at really low prices land around the island. As one can imagine the social structure of Mauritius in that time was formed by small plantation (sugar) owners, rural and urban proletariat and finally the incipient bourgeoisie of the trading business. Instead of having extractive institutions, the Mauritian businesses had to rely on trade and competitiveness of prices.

The first big issue with the incorporation of Mauritius to the UK, was that the island was forced to abandon its role as a commercial hub in the Indic ocean. This was due to the existence of a series of laws called the Navigation Acts. Passed by the English Parliament in the 16th, 17th and 18th these laws regulated the different types of trades that a colony could do with other countries that were not part of the UK. These Acts forced the local bourgeoisie to invest in another type of business, now that trade was out of the picture. The movement of investment money from the trade and ship building into sugar plantations was a must. In that time the only type of plantation that was giving profits. Those who invested in sugar were rewarded when in 1825, the preferential tariff for sugar from Western India was revoked. This event caused a massive

increase in the numbers of plantations and the amount of money that was invested in each one of those creating a connection of a product and a country that continues nowadays.

The sugar business was not as prosperous as it looked at that time. The excessive power that the sugar plantations had over the whole economy, was too much to bear (from all of the exportations of this island, sugar accounted for more than 80%). This excessive dependence that the country wealth had from the price of sugar was translated into a series of ups and downs in terms of recession and growth. Exacerbated by the fact that most of the plantations where supported by local capital. The investors from the metropolis had no interest in investing in the island due to the scarce profits that one could make. In 1880's the progressive decay of the profits and the inability to adapt the new technologies into the fields, provoked the division of the biggest plantations into smaller ones owned by the ex-workers or other businessmen. This division was the final point in the transition from a plantocracy into a "developmental" capitalist colony.

The first and most important source that Mauritius had during most of its existence as a colony was the use of African slaves as forced labor. These were introduced by the French in the 17th and 18th centuries. Their main role was to work in the incipient sugar fields and also as artisans in Port Louis. The work was so brutal and demanding that it caused the death of thousands of slaves. This is thought as one of the reasons why the owners of plantations during the French ownership were able to secure small profits from their plantations (not as big as the profits obtained by the merchants). When the British colonized the island one of the first things to change was that the trading of slaves was no longer permitted. The ownership was, the trading not. We mentioned above how the mortality was really high, without being able to import slaves, the slave population would soon disappear (the mortality was especially high for the adult males). The answer of the owners against this prohibition was to trade illegally for the slaves with the help of the local authorities. This illegal trading continued to happen until 1835 (the year that slavery was abolished through the British Empire).

Once slavery was abolished, the colonial government started looking for new manpower sources of work, which they found in India (the biggest colony of the empire). Before talking about the Indian immigration, we need to make a difference between the two types of Indian immigrants that arrived in Mauritius. The first ones where the so-called voluntary immigrants: traders that went to Port Louis to trade with different commodities, they also bought some land from the big plantations. The second ones were the indentured laborers. The ones that were hired to perform the work of the slaves. As time passed these Indian immigrants started to form their own social classes. The indentured laborers were divided into three groups. At the top we had the job contractors, immigrants who knew French (At the treaty of Paris one of the requisites was that the British had to allow the settlers to speak French) and controlled several hundred men to be used in any plantation that paid the job contractor. In the middle we find the so-called Overseers, immigrants that were in charge of supervising that everything was functioning properly in the plantation. In the bottom we find the immigrants who had to do the manual job. The big difference between these immigrants and the slaves is that the former had a salary and a contract. When the contract was about to expire, it was normal to see the owner of the plantation offering small plots of land and some livestock to the immigrants so they would stay in

the same plantation. This was the most usual way for an immigrant to ascend in the social scale. As we mentioned above in the 1880's, keeping large plantations was no longer profitable. The money was made in the processing of the sugar. In response to these changes of the markets. The owners started to give bigger (loan) portions of their lands to the immigrants working for them. The only requisite was that the sugar would be processed in the factory of the owner (The owner would keep a portion of the benefits). This process was called the "morcellement[9]" it is considered by many as one of the reasons why Mauritius had a better development than most of the African countries. From Daron Acemoglu et al perspective, it indicates a shift from an extractive to a more inclusive institutional model.

2. Second Period (1936-1950)

To understand this period we need to have a small flashback. Through the first 20 years of the 20th century, Mauritius was riddled with economic crises due to the effects that the great depression had on the price of sugar worldwide. In the social part of the country, we find that the "morcellement" gave birth to a small and quite poor bourgeoisie of small landowners and petite traders.

In the 20th century, we find Mauritius society divided into four groups. The first one was the working class. They were the ones working in the sugar plantations, comprised mostly of the Indian indentured labor. The second one was the immigrants that had progressed more. Indians, Creole or Africans who worked as lawyers, doctors or merchants. The third group was the owners of the sugar plantations and mills. Surprisingly this group is formed by the French settlers that stayed in the island. The fourth and final group was the government officials, all of them from the UK or other British colonies.

After this petite introduction, we go back to 1936. As the reader might remember in those times, Mauritius growth and wealth was extremely dependent on the price of sugar, a price that plummeted due to the great depression. This caused a recession that was especially hard for the poor, wages were reduced and the already bad conditions that the workers had, were worsened by the estate owners. This recession happened in the middle of an international campaign to give more rights to the different colonies, inside Mauritius a political party was about to appear. This political party was the Mauritius Labour Party (MLP) whose leader Maurice Cure, a doctor of creole origins, demanded rights for the poor (education, health and pensions) and the possibility that all men could vote in the elections. The issue with the MLP is that it was the colonial government considered them an element of agitation not a political party, due to the role that the party had in the 1937 and 1943 riots, by the British authorities in the island. The thing that saved the MLP of disappearing was the strong relation that the MLP had with the British Labour Party (BLP). This relation was so strong that the BLP often intervened to calm things and force changes in the island. This relation was also important in the sense that the BLP helped the MLP with their demands and also giving them vital information of what was going on in the UK. As Jeremy Seekings (2011, 165) put it: "Mauritian Workers depended on the British equity to extend to the workers of the empire the social and political reforms which have led to the progressive state occupied today by European workers (Quote by the MLP)". This means that

[9] Fragmentation in french.

the Mauritian workers depended from the British to obtain the information and to pass the laws that were necessary to improve their lives.

Even though Clifford was considered a progressist, his government was characterized as one that continued to be with the rich owners, and also that the laws passed by his government were ill written or did not solve the problem. In the 1940's the situation did not improve because the UK adopted the idea (very much a Lipset approach) that introducing these reforms (pensions, health and social insurance) before developing the country could not work because the people living in those countries did not have the education and income level to support them. The idea was to develop before an insurance. The argument was that families had the role of protecting (insure) those who cannot work for themselves.

Things started to change in terms of the quality of democracy in 1948. This was due to the fact that 1948 was the year, which the law that awarded voting rights to every literate man was passed. It was also the year that the legislative council was formed. The reformists won the elections that year. The biggest victory of this council was the introduction of the non-contributory pensions in 1950.

Many historians have noted that the event that saved Mauritius from the policies that were applied in the rest of Africa, was the lack of land to create more productive plantations of food across the country. This is the policy that the British followed in the continent: increase the production of commodities and offer some services and the rest (welfare and poverty mitigating programes) would come after. Again, this evolution that Mauritius suffered is in consonance with the Acemoglu et al theory that inclusive institutional models tend to lead towards democracy and thus a higher economic growth in the long run.

3. Third Period (1966-1968)

The years that preceded this period were characterized by the amount of reforms that took place in the island. Increasing the monthly pension wage, lowering the qualifying age and incrementing the number of social assistance programs and also universal suffrage was approved in 1959. That is a big change of the situation compared to 1930.

In the 1960s we have a big division between the Indians and the Creoles. The first ones were the offspring of the indentured labor that was brought in the 19th century. Thanks to the "morcellement" process and the benefits given by the colonial government, they had reached positions of power both as civil servants and also as planters. Being the majority of population of Mauritius, they were one of the groups that created the MLP, which they ended up controlling. This position of control in the society gave them special status with the British. Actually, the British desired that once left the island, the Indians would take control of the new country. The problem was that the Indians were not alone in the island. The island was also inhabited by the offspring's of the French settlers, the civil servants of color, the ex-slaves that lost their jobs when the Indians came, the Chinese business owners and small groups of Muslims, who united thanks to their common fear towards the Indians.

In response of the Indians taking control of the MLP, the other ethnicities created the Parti mauricien social democrat or PMSD. This political party was controlled by the white elite of

the sugar plantations with the support of the other groups due to the fear they had of the Indians. The two political parties clashed in some topics especially in the independence one.

The 1960s was the time that all the colonial powers started to allow for independence in their colonies and Mauritius was not an exception. As one can imagine the two main parties clashed big in this discussion. The PMSD wanted to become part of the United Kingdom, so the white owners could continue to sell their sugar in the UK plus a possible access to the newly formed European Economic Community once the UK formalized their entrance. On the other hand the MLP wanted the independence. Paradoxically the UK was more in favor of the independence of Mauritius, because the country was still underdeveloped and it was very expensive to maintain. However, they wanted control of the atoll called Diego Garcia, that belongs to an archipelago called the Chagos islands, that where part of Mauritius in that time. The reason of this interest is that the Americans wanted to build a base in the Indian Ocean and this atoll was the perfect size for them to build a military base there. To obtain this archipelago Britain tricked the MLP by making them believe that they were willing to accept a referendum of union to the UK. The MLP seeing that the polls were in favor of the PMSD, did not want to take the risk of losing their chance of becoming independents due to an archipelago. The MLP ended up accepting the loss of the archipelago in exchange of three million pounds and the help of the British in the upcoming elections.

The pro-independence movement won and independence was declared. The following days different conflicts appeared through the country, especially in Port Louis. The agitators of these conflicts were the black and Muslims who thought they would lose everything because the Indians had the power now. The interesting thing about this was the fact that the white owners discovered that the Indians shared the same values as them in terms of the sugar interests and private property. This discovery fueled the coalition of the MLP and the PMSD in every single government in Mauritius, until recently.

4. Fourth Period (Mauritius since the independence to today)

After the independence we find that the excessive reliance of the country on the sugar exports was not solved, they accounted for over 95% of the total exports of the country. The first years of Mauritius as an independent country could be described as difficult and riddled with problems: overpopulation (especially after the forced exile of the inhabitants of the Chagos islands), an economic crisis and ethnic tensions due to the fear that the creoles had against the Indians. Mauritius had a high chance of ending like the other countries were democracy was a failed experiment. The differences that saved Mauritius was that the MLP and the PMSD shared the same ideology (Fabian socialism[10]) and also that the electoral system of Mauritius was created to avoid one-party governments and the over-representation of a single ethnic group.

The electoral system of Mauritius was created following a consociational[11] system. This system divides the country into twenty districts that have three members that can be elected in the elections (there is an island called Rodriguez that is a district on its own and has two eligible

[10] Fabian socialism was an ideology inside the BLP, that preferred to progress more slowly in terms of development, so the population and the state could carry the new burden

[11] Electoral system that is followed by divided societies, based on coalitions governments to avoid tensions.

members). From these 62 members, eight are assigned to the so called "best losers". This is important because Mauritius follows the British system to elect the members of first-(in the case of Mauritius three)-past-the-post. In simple terms, the different voters of the districts have to vote for three candidates and the ones who are elected are the ones who receive the highest number of votes. We have to remember that the eight best losers also receive a seat. The objective is avoiding a single party government. This is a clear example of an inclusive institution accordinf to Acemoglu.

Back to the history. The coalition formed by the MLP and the PMSD was vital for the creation of the Export Processing Zones (EPZ). The origin and reason for these zones was to reduce the excessive power that sugar exportations had in the Mauritian economy and to change the economy from a protected economy whose main source of income was exporting primary commodities to an export manufacturing one. These EPZ were build following the example of the NIC's in East Asia. The EPZ had really low taxes as one of the objectives was to attract foreign and local (the rich owners from the sugar plantations) investment.

In the political area, the appearance of the Mouvement Militant Mauricien (MMM) a party whose main objective was a communist revolution to expand the social and assistance programmes, challenged the established coalition The coalition feared that this new party could win the 1972 election and destroy everything that these two parties had built. In response of this threat the Mauritian government arrested the leaders of the MMM and canceled the 1972 elections. This was a crucial moment in the establishment of the democracy in Mauritius. What would have happened if the MMM turned violent due to the arrest of their leaders or that the coalition decided that their control was better than democracy. Instead the MMM pressured for smaller reforms and abandoned the idea of a revolution and embraced social democracy. The coalition seeing these changes decided to host the 1976 elections.

The MMM won but, thanks to the Mauritian electoral system, the government was a coalition formed by the MLP and PMSD. That same year the oil crisis started, with this crisis came the sugar crisis, people during crisis in those times did not bought sugar. With the recession and the protests (with the help of the MMM) going on in the whole country, the government was forced to increase the amount that was destined to social policies (also the wages of the public workers were increased). These policies only caused a deeper recession which at the end forced the government to ask for the help of the IMF and the WB. These organizations asked for a series of reforms and cuts in the public budget. These reforms included: new taxes, the increase of wages should be smaller than the increase in consumer prices, reduction of the social benefits that the poor could use (food vouchers, education and healthcare benefits, subsidies) and finally the devaluation of the Mauritian rupee. These reforms caused heavy protests that ended in the 1982 election. This election was won by the MMM.

With the victory of the MMM everyone expected these reforms to come to an end. What no one saw it coming, was that this MMM was more moderated compared to the one in 1976. When the MMM reached the government, they acknowledged the importance that these reforms had for the country and the necessity to keep applying them. Obviously, this change of plan caused a division in the MMM and the birth of a new party called the Mouvement Socialiste Mauricien

(MSM). These new party joined the MLP to win the 1983 elections. Thanks in part to the reforms and also to the recovery in the price of sugar, the new government was able to leave the programs of the IMF and the WB. The new focus was to attract foreign companies to invest in the EPZ through a combination of fiscal benefits (low taxes, duty free and the possibility of exporting to new markets thanks to the different treaties that Mauritius had with different countries).

In the 1990s and 2000s, the government idea was to transform Mauritius from a manufacturing economy into a services one. The two goals of the government were to establish as the main country in Africa from where you could invest anywhere in the world. In other words, to establish your investment firm/banks there. The country has had a minor exit in this field due to the lack of opportunities in East Africa. Nowadays Mauritius is used as a bridge to invest in India. Mauritius has a double taxation agreement with India.

5. Conclusion

The history of Mauritius indicates that there is a relationship between democracy and economic growth and that democracy has had a positive effect on the economic growth of this island. If the Island would have had natural resources, it may well have become part of an extractive colonial model. But this was not the case. In fact, the need for immigrants led to the "morcellement" which played a redistributive role. This process gave birth to a whole new class of petite owners that would play a role in the upcoming formation of the country and the emergence of the MLP. Later on, the BLP helped the MLP to ask for the same rights that workers had in the UK. The establishment of the legislative council in 1948 and universal suffrage for every adult in 1959 were some of their main victories.

The electoral system in Mauritius was also a catalyst for stability and growth thanks to its inclusiveness. In 1968 the country was on the verge of a civil war. The other ethnicities of the island feared that the Indians once Mauritius was independent would soon take over everything they had, knowing this the lower classes started to riot. What saved the country from this collapse is that the two biggest parties had a lot to lose if this ever happened. Both the MLP and PMSD were controlled by the owners of the sugar plantations and the owners of the business in the island. These parties created a system that would give a voice to every ethnic group but at the same time these groups had to make deals with the others thus giving a sense of national unity. To put it another way, without the establishment of an inclusive institutional system, Mauritius would have had a civil war.

VII. CONCLUSIONS

The objective of this research was to determine whether the developing countries of Africa should fight to be democracies when there is literature that argues that the best political system to develop a low income country is an authoritarian regime. To try to answer this question, we formulated a hypothesis. The hypothesis is that democracy has a positive effect in economic growth. To test this hypothesis, we use the country of Mauritius as the case of study. The reason Mauritius is used is due to the high standards of its democracy and also the level of development that the country has achieved. The objective was to establish whether its level of development could have been achieved without its evolution towards democracy.

We used two approaches quantitative and qualitative to test what type of effect democracy has had in the development of Mauritius. We use these approaches because we want to see whether they agree in the effect. For the quantitative analysis we use a variation of the Granger causality test. The test serves to establish whether the past values of GDP per capita or democracy can explain the present values of democracy or GDP per capita; if the past lags of a variable x mixed with the past lags of variable y can explain better the present values of variable y, if they do then we have causality. For the qualitative analysis we follow a historical analysis of the political and economic events that shaped the history of Mauritius and the role that democracy played.

The results that came from the two analyses differ. The Granger test that we have performed in the quantitative analysis says that democracy (the two variables that we have tested) does not granger-cause GDP per capita. Yet, the results are not conclusive because we also find that GDP per capita does not granger-cause democracy (in any of the two variables we have used for democracy). This means that neither the past values of democracy and GDP per capita do not help to explain better the present values or that we have a problem in the way this analysis was built. The problem can come from the way that the variable democracy is built in the forms we use in the study. Maybe there is a relation but these three variables failed to capture it, or maybe is due to unidentified problems like structural breaks in the time series or other problems that we have failed to solve.

While the results from the quantitative analysis are not conclusive, the results of the qualitative analysis do not allow to reject our hypothesis. The historical analysis of the different events that happened in the country indicate that democracy has had a positive effect in the economic growth of the country. The role that democracy played was to unify the country in times were the different ethnicities were ready to go to war by giving them an equal voice in the parliament. This role was achieved through the establishment a system that favored coalition governments instead of one party this system helped unite the different ethnicities into a unity that continues nowadays. .

This research thus indicates that democracy can play a role in fostering economic growth by offering a system that prevent wars or extreme conflict by giving a democratic tool to every citizen so they can express their voice. If the citizens see that the concerns that they might have are being heard by the politicians then there is a lesser chance for this citizens to revolt. They feel as part of the system thus providing the stability necessary to foster economic growth. It

may therefore be an important factor for development especially in countries, like the African, which are divided in terms of ethnic groups or religions. But before implementing a similar electoral system than the one in Mauritius into other countries we need to check that the different elites that control these groups share interests that would not incentivize them to promote coups.

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IX. ANNEX

1. ADF Test order 2 for every variable (lib_democracy, polityIV democracy, GDP per Capita)

```
Augmented Dickey-Fuller test for d_l_liberaldemocracy
testing down from 9 lags, criterion AIC
sample size 38
unit-root null hypothesis: a = 1

  test with constant
  including 3 lags of (1-L)d_l_liberaldemocracy
  model: (1-L)y = b0 + (a-1)*y(-1) + ... + e
  estimated value of (a - 1): -1.62152
  test statistic: tau_c(1) = -4.86277
  asymptotic p-value 3.864e-005
  1st-order autocorrelation coeff. for e: -0.038
  lagged differences: F(3, 33) = 2.803 [0.0550]
```

PolityIV democracy is the same variable as democracy2_e_democ

```
Augmented Dickey-Fuller test for d_l_democracy_2_e_democ
testing down from 9 lags, criterion AIC
sample size 41
unit-root null hypothesis: a = 1

  test with constant
  including 0 lags of (1-L)d_l_democracy_2_e_democ
  model: (1-L)y = b0 + (a-1)*y(-1) + e
  estimated value of (a - 1): -1.025
  test statistic: tau_c(1) = -6.40312
  p-value 2.647e-006
  1st-order autocorrelation coeff. for e: -0.001


Augmented Dickey-Fuller test for d_l_gdp_per_capita
testing down from 9 lags, criterion AIC
sample size 41
unit-root null hypothesis: a = 1

  test with constant
  including 0 lags of (1-L)d_l_gdp_per_capita
  model: (1-L)y = b0 + (a-1)*y(-1) + e
  estimated value of (a - 1): -0.97247
  test statistic: tau_c(1) = -6.1004
  p-value 6.56e-006
  1st-order autocorrelation coeff. for e: 0.032
```

2. VAR Building Liberal democracy and Polity IV.

Vector Autoregression Estimates
Date: 09/05/20 Time: 06:36
Sample (adjusted): 1970 2010
Included observations: 41 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LGDPPC	LLIBDEM
LGDPPC(-1)	0.972712	0.032711
	(0.16390)	(0.03853)
	[5.93475]	[0.84908]
LLIBDEM(-1)	-0.197022	0.936849
	(0.68008)	(0.15985)
	[-0.28970]	[5.86069]
C	0.574770	-0.368007
	(0.63745)	(0.14983)
	[0.90167]	[-2.45610]
LGDPPC(-2)	-0.024701	-0.005239
	(0.16700)	(0.03925)
	[-0.14791]	[-0.13346]
LLIBDEM(-2)	0.351047	-0.215660
	(0.65769)	(0.15459)
	[0.53376]	[-1.39505]
R-squared	0.976670	0.907017
Adj. R-squared	0.974078	0.896685
Sum sq. resids	0.179889	0.009939
S.E. equation	0.070689	0.016615
F-statistic	376.7683	87.79175
Log likelihood	53.11778	112.4839
Akaike AIC	-2.347209	-5.243117
Schwarz SC	-2.138236	-5.034144
Mean dependent	9.134499	-0.430281
S.D. dependent	0.439050	0.051693

Determinant resid covariance (dof adj.)	1.38E-06
Determinant resid covariance	1.06E-06
Log likelihood	165.6569
Akaike information criterion	-7.593019
Schwarz criterion	-7.175075
Number of coefficients	10

Vector Autoregression Estimates
Date: 09/05/20 Time: 06:38
Sample (adjusted): 1970 2010
Included observations: 41 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LGDPPC	LDEMPOLITYIV
LGDPPC(-1)	0.807975	-0.001171
	(0.15768)	(0.04170)
	[5.12400]	[-0.02808]
LDEMPOLITYIV(-1)	-0.078779	0.916743
	(0.62855)	(0.16622)
	[-0.12533]	[5.51515]
C	-1.147780	0.214075
	(0.57206)	(0.15129)
	[-2.00638]	[1.41504]
LGDPPC(-2)	0.050309	0.005776
	(0.14587)	(0.03858)
	[0.34490]	[0.14975]
LDEMPOLITYIV(-2)	1.170150	-0.028366
	(0.67064)	(0.17736)
	[1.74482]	[-0.15994]
R-squared	0.981114	0.891912
Adj. R-squared	0.979016	0.879902
Sum sq. resids	0.145621	0.010184
S.E. equation	0.063600	0.016820
F-statistic	467.5487	74.26527
Log likelihood	57.45010	111.9834
Akaike AIC	-2.558542	-5.218704
Schwarz SC	-2.349569	-5.009732
Mean dependent	9.134499	2.271748
S.D. dependent	0.439050	0.048534

Determinant resid covariance (dof adj.)	1.14E-06
Determinant resid covariance	8.82E-07
Log likelihood	169.4336
Akaike information criterion	-7.777250
Schwarz criterion	-7.359305
Number of coefficients	10