Democracy: Commodity or Luxury?

A research into the impact of democratization on economic growth

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Abstract

in this bachelor thesis, the possible relation between democratization and economic growth is reviewed. Using both a literature review and a multiple regression with the growth in GDP per capita as the outcome variable, and a democracy index as the explanatory variable I try to find out If and in what way a shift towards democracy benefits the economic growth of a country. Based on this research I can conclude that democratization leads to small yet significant improvements in the economic growth. This increase in growth seems to be more present for countries that had an initial low level of democracy.

Introduction

Since the nineteen sixties, a spectacular amount of countries experienced a regime change towards democracy. In 1960, less than 20% of all countries in the world was depicted to be democratic; in 2012, this has increased to over 55%. While less than 40% of the world population lived in a democratic country in 1960, this has increased to 55% in 2012 (Coppedge et al., 2018). This worldwide switch towards democracy has impacted many layers of society in all parts of the world. The debate on the effect of democratization on economic growth, however, has still not been settled, despite many qualitative contributions by distinguished economists. Therefore, the research question in this paper will be

What is the effect of democracy on economic growth between 1960 and 2012?

As indicated earlier in this introduction, the relation between democracy and economic growth has been researched in a great number of academic articles, which has led to a variety of outcomes. This bachelor thesis aims to make an overview of the most relevant academic papers that investigated the effect of democratization on economic growth. Afterwards, I will conduct a research inspired by these papers. The results and conclusions from this research will then later be compared to the outcomes and conclusions that were obtained by the past research. In this way, this paper will contribute to the debate on the impact of democratization on economic growth in two ways. At first, this paper will contribute to the debate by giving a clear oversight of the outcomes past research has come to, what methods were used to come to these outcomes and a critical analysis how these methods differ and how this leads to different results.

Secondly, this paper will contribute to the academic debate on the questions center in this line of research, by performing a new method based on the most relevant academic works on the relation between democracy and economic growth. This method could meaningfully contribute to the ongoing debate on the effect of democratization on economic growth.

Additionally to the scientific relevance sketched above, this bachelor thesis is also socially relevant. The strive for democracy has been ongoing for thousands of years, while the debate

on the economic consequences still leads to a variety of outcomes. An overview of the most important works in this line of research can contribute to better informed policy making and to a more thorough understanding of the economic consequences of a regime change towards democracy. Additionally, executing a method inspired by the papers that have already been written on this matter, but using modern day data, could be helpful in evaluating the economic consequences of a democratization in the present time. Lastly, a comprehensive literature review could lead to improved understanding among students and other academics new to this line of research, which could lead to more research on this important matter in the future.

This paper consists of two parts. The first part consists of the theoretical framework and a literature review. Part II is devoted to a quantitative research which I have conducted myself. Lastly, the third part will draw a combined conclusion on the main question and show some suggestions for future research.

Part I- Literature Review

Theoretical Framework

As stated before, many scholars have previously debated the effect democracy may have on economic growth. The discussion about this possible relation is mainly a discussion on the mechanisms through which democracy may have an effect on economic growth. In this literature review I will focus on the different mechanisms that past research has identified as possible ways via which the democratization of a country impacts the economic growth of a country.

Another dimension of this literature review will be the used methods that have previously been used in research on the effect of democratization on economic growth. The different methods that economists have used in their articles to find the effect of democracy on economic growth are pointed out and discussed. Additionally, the different results that these techniques yield will be compared and explained.

Lastly, the different results that past researchers have come to in their academic articles will be displayed. These results will be referred to after the results of the regression have been presented and will serve as a comparison for the results I have obtained myself.

Prior to the discussion of the mechanisms through which democracy can have an effect on economic growth, there will be a general description on the economic growth theory as described by Solow. This is done to place the discussed mechanisms in their context and will serve as a starting point for the search for the effect democracy has on economic growth.

Economic growth

In 1956, Robert M. Solow's article 'A Contribution to the Theory of Economic Growth' got published in the Quarterly Journal of Economics (Solow, 1956). In this article Solow introduces an extensive theory on economic growth, that has been of great influence on economic science ever since.

One of the ways in which this model distinguishes itself in comparison to other models, is that it is built on the assumption that factor markets, such as markets for capital and labor, clear themselves. This implies that production in each period is defined by the available supplies of capital (K) and labor (L). These two factors, roughly, are the stepping stones of the Solow model, and are captured in a production function, such as equation (1).

$$Y_t = BK_t^\alpha L_t^{1-\alpha}$$

Where the variable B represents the Total Factor Productivity (TFP), which generally captures all factors of influence not explicitly mentioned in the production function.

As one can see from this simple production function, the production and hence the national income at time t, denoted by Y_t in the production function, is determined by the capital accumulation and the involved labor.

In turn, these two main variables in the economic growth theory are related to other economic mechanisms. Each of these mechanisms will be briefly covered in the coming part, and later the balance and interactions between all of these mechanisms will be shown.

Savings and capital accumulation

In the basic Solow model, capital is determined by savings. Savings in turn are assumed to be an exogeneous rate of the national income. Therefore, the savings can be denoted as in the way of equation (2).

$$S_t = sY_t$$

With this equation set, capital accumulation is the total of the increased savings minus the deprecation of capital, as displayed in equation (3).

$$K_{t+1} - K_t = S_t - \delta K_t$$

With δ denoting the deprecation rate, and S_t denoting the savings at time t.

Population growth and labor supply

The labor supply is in turn effected by the population growth, N. The labor supply at time t+1 can be derived from the labor supply at time t, corrected for the population growth. This has been formalized in equation (4).

$$L_{t+1} = (1 + N)L_t$$

The costs for capital and labor are rent (r) and wage (w), respectively. These mechanisms have a price to their marginal output.

So far, one can establish that in the basic model of Solow, with no trade or government, the output of the economy only tends to grow with the population growth and the savings. The endogenous variables in this theory are y, S (for a given rate s), K_t (for a given K_0), L_t (for a given L_0), w and r. B,α,n and s are set exogenously.

Steady state and technological progress

In the theory of Solow, countries eventually emerge towards a steady state. This is a state in which the markets clear and all the endogenous variables grow at a constant rate over time. This state is expressed in the Solow equation, displayed in equation (5).

$$K_{t+1} - K_t = \frac{1}{1+n}(sBk_t^a - (n + \delta)k_t$$

Note that in the steady state, $K_{t+1} - K_t$ must equal zero.

In case technological progress is allowed in the model of Solow, the variable L, depicting labor, is multiplied with a factor A, that represents labor augmenting technological progress. The

sum AL is referred to as effective labor. This is an exogenous variable. The addition of technological progress forces the Solow equation to change, since the technological progress must be incorporated. This progress will be denoted by g. This yields equation (6).

$$K_{t+1} - K_t = \frac{1}{1+n+g}(sBk_t^a - (n + \delta + +g + ng))k_t$$

The implication of this addition is, that the endogenous variables k, y, c and w now will grow with g when in the steady state; the output per person is now determined by the technological progress.

Human Capital

The addition of human capital to the model adds a new dimension to the capital variable. Agents now face the choice to not only invest in physical capital, but also to invest in their human capital. The total capital is now denoted as the aggregate of physical and human capital. Human capital cannot be parted form the workers. Human capital is also often referred to as education. Workers can either invest in their own education, or a firm can invest in the education of their employees in an attempt to increase their productivity.
Human capital is, just as the physical capital in equation (2). Human capital contributes to economic growth in the same way as physical capital does: by accumulating capital, the output of the economy will grow.

The production function of equation (1) alters with the introduction of human capital. This yields equation (7).

$$Y_t = K_t^\alpha H_t^\varphi (A_t L_t)^{1-\alpha-\varphi}$$

International Trade

In economics, trade is fiercely advocated by many economists. Trade could potentially make everyone better off than in a situation without trade, since it can grow the economy as a whole. That is why most growth models allow for trade. Trade emerges when a country has a comparative advantage over another country in the making of a certain product or service. This idea, first formalized by Pareto, was extended in the Heckscher-Ohlin model, which essentially stated that countries who are redundant in the specific factor of a certain good,

will trade this on international markets. This effects their growth and eventually their long run growth (Bajona, 2010). Through trade, the output of an economy can be enlarged or shrink, depending on whether the sum of exports and imports is positive or negative. Furthermore, changes in international trade patterns can potentially alter the terms of trade. This can be of influence on the employment in the country primarily exporting the goods that have changed in their relative price, which could in turn hurt of benefit the national economy of this country (Barro, 1994).

Exogenous and Endogenous growth models

When studying the Solow model, it is important to notice that it is a so called exogeneous growth model. In the long run, the gross domestic product (GDP) per capita will grow with the rate of technological progress, which is set exogenously. This makes the Solow growth model an exogenous growth model, since the increase in output of the economy is driven by factors that are not included in the model.

Attempts have been made to include the development of technological progress in the growth model, and thereby make the model endogenous. In an endogenous model, economic growth is driven by factors that can be explained through model.

Convergence

Another important phenomenon in the study of economic growth is the theory of convergence. This theory depicts that countries that are initially further away from their long run growth, will grow faster towards this long run growth rate than countries that are already close to this growth path. This idea is also present in Solow's model (Solow, 1956) of economic growth. Without discussing the details on the theory of convergence, the conditional convergence appears because of diminishing returns to capital, which would intuitively explain why countries with an initial lower value of capital and/or economic growth, were to receive more benefits from each investment than an economically more developed nation.

The remainder of part I will contain a discussion on what the economic literature has written on the mechanisms, that have been discussed in the previous section about economic growth in general. Afterwards, the results and the different methods and techniques that the authors of the academic literature executed is discussed, as well as the different data sources that have been used to come to these results.

Mechanisms

Capital

The way in which capital effects economic growth has been discussed earlier in this section, where a more general theory of economic growth has been displayed. In this section it was explained that capital, both physical and human capital, can contribute to economic growth by capital accumulation, which is, among other, the result of savings.

In the discussion whether democracy can have an effect on economic growth through capital, one has to ask whether democratic countries are better able to accumulate capital than autocracies are. Academic literature has yet to reach consensus on this.

Przeworski and Limongi (1993) argue that democracies undermine investment, since democracies are vulnerable for the pressure of immediate consumption. Additionally, the authors believe that less democratic regimes are better able to enforce the most favorable savings rate, or to have a large influence on other determinants of capital (Przeworskit et al, 1993). To prove this point, they use the reasoning from Rao (1983), who stated that 'dictators should better be able to create the right amount of investment' by measures that would not be chosen by popular vote, and therefore dictators should better be able to control capital accumulation in their country. These claims, however, are not supported by any data, and are coming from more theoretical arguments typical for political economy.

Gerring, Bond, Barndt and Moreno (2005) came to different conclusions. The journal of World Politics published an article by Gerring et al. where they analyze an historical perspective on the effect of democracy on economic growth. They argue that physical capital would better be accumulated in democratic countries, since they expected these countries to be more stable and may therefore have a better climate for investments. The same line of reasoning would apply to human capital, and even social and political capital (Gerring et al., 2005). Since these last two categories of capital are not statistically proven, I will omit them further from

the analysis. These theoretical hypotheses are supported by empirical research, which led to significant and weakly positive effects of democracy on economic growth.

Robert Barro (Barro, 1996) attempted to account for capital in an investigation on the relation between democracy and economic growth by extending the neoclassical growth model with human capital. Barro adds average investments ratios to his cross-country regressions, to control for the effect that this variable may have on economic growth. The corresponding coefficients turn out to be positive and statistically significant.

Although the empiric evidence, as provided by Barro (1996) and Gerring et al.(2005) seems to indicate that democratic countries seem to be better able to accumulate capital, the academic literature does not appear to be unanimous on this. There could be arguments that advocate that less democracy is beneficiary to capital accumulation. However, all reviewed literature on this topic does include capital in their econometric evaluation.

Education & Human Capital

As described in the general part on economic growth, education is often related to by the human capital, and *Vice Versa*. Just as physical capital, human capital can contribute to economic growth through accumulation. Just as physical capital accumulation, there are decreasing returns to scale, which would mean that the theory of convergence can also be applied to human capital/education.

Human capital and/or education are incorporated in most studies that look into the possible relation between democracy and economic growth. If human capital were to be effected by democracy, this could lead to an Omitted Variable Bias when looking for the direct effect that democracy has on economic growth.

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Acemoglu, Naidu, Restrepo and Robinson (2019) found however that democracy may positively influence the secondary schooling enrollment. This relation was found by using interaction terms. This effect was significant, but the coefficient small.

Barro (1996), also accounted for human capital in his regressions, but decided to use a broad definition. Human capital got split up in a few components, covering life expectancy, male- and female school attainment and a overall human capital variable, meant to cover all elements of human capital not explicitly mentioned in the regression. He found mixed results for the education variables: a positive effect for males, and a negative effect for females. The effect of the overall human capital variable was significantly negative but cannot reliably be interpreted since the results appeared to be highly sensitive for outliers, according to the author.

Gerring et al. (2005) have distinguished four sorts of capital, including human capital. In their research, they establish theoretical arguments why democratic leaders have electoral incentives to shape policy that enables human capital to accumulate. However, the claims that democracy influences the human capital stock in a country is not supported by data in the research of Gerring et al. (2005).

Baum and Lake (2003) devoted a paper to the relationship between growth, democracy and human capital. They have found that democracy has a positive impact on school attainment and life expectancy, and through these mechanisms the institution of democracy has a positive impact on economic growth. Especially in countries with an initial higher GDP per capita, there seems to be a clear increase in human capital when the level of democracy goes up, and as indicated in the discussion about economic growth in general, this would mean that the economy of a country grows as a result of the accumulation of human capital.

In the bottom line, there seems to be some agreement among researchers that there is some interaction between democracy and human capital, through which there may be an effect of democracy on economic growth. Comparison on this matter is difficult, since not all scholars use the exact same definition of human capital.

International Trade

The final mechanism discussed in this section is international trade. In past research, international trade has been a part of the methods conducted in most studied academic literature.

Barro (1994) accounted for international trade by including the terms of trade in his IV regression. He stresses in this paper that the terms of trade do not have a direct effect on the GDP per capita, but that the terms of trade can be of influence on the trade patterns, and therefore the employment in a country. This would especially be true for poorer countries, since the economies of these countries would be more dependent on one or a few products. Acemoglu et al. (2019) do not pay a lot of attention to the interaction between trade and democratization. The authors make a brief notion that international trade could be endogenous to democratization, but when running a robustness check the effects do not seem to differ much from their baseline results.

Gerring et al. (2005) use a different approach. In their cross-national regression, a variable about trade openness is incorporated. This variable yielded a significant, positive coefficient of about 4%.

Persson and Tabellini (2006) used yet another way to deal with the possible interaction between trade and democracy. The authors control for a whole set of economic liberalizations, including international trade. This yields positive and significant values for both a presidential and parliamentary democracy. However, it is not possible to tell how much of this change can be contributed to a trade liberalization and what can be attributed to other economic reforms that come along with a democratic shift.

These four papers show four different approaches to control for the effect that international trade

Methods and Results

Table 1 in the appendix contains an oversight of the results of all the studied literature. One can see that there are three dominating methods that have been used in the past to investigate the relation between democracy and economic growth: cross-country regressions, the Instrumental Variable (IV) technique and theoretical analysis. In the coming section the different outcomes for the democracy variable will be discussed, along with some comments about how to interpret these results.

Democracy

In table 2 all coefficients that have been found for democracy in the past quantitative research have been listed.

The content of this table has to be seen in coherence with table 1 and table 7, containing the outcomes of all studied academic work and the democracy variable used, respectively. From table 7, we can learn that the Polity IV dataset is the most widely used index to measure the level of democracy in a country.

A noteworthy conclusion came from Gerring et al. (2005) The authors of this paper considered democracy to be a 'stock variable' instead of a level variable, as most other authors claimed. Their hypothesis was that the benefits/drawbacks of being a democracy are developing over time. They accounted for this hypothesis by not using the Polity IV index in the way most researchers did, but by regressing the sum of all the Polity IV scores. The authors obtained small but mainly positive significant results. Their preferred model yielded a positive and significant effect of 0,007.

This conclusion does not rhyme with the conclusion Rodrik and Wacziarg (2005) came to. In their paper, Rodrik et al. (2005) checked whether the effects of an increase in the democracy index had different consequences for established democracies than for new democracies. This led to the conclusion that younger democracies seemed to benefit from an increase in the level of democracy, while established democracies perceived negative outcomes from an increase in the level of democracy.

This conclusion from Rodrik et al.(2005) was also found by Barro (1996), who concluded that countries that were initially non-democratic seemed to benefit more from an increase in democratization than countries that were initially less democratic.

To give a sense on how the opinions on the effect of democracy on economic growth are varying over multiple economist, Przeworski and Limongi (1993) made an overview of 21 papers, and classify whether the outcomes of these papers conclude that democracy is beneficial to economic growth, or not, or that the result is inconclusive. A table with the results of this Meta-Analysis has been added to the appendix, see table 8.

In a broad sense, these short-term results are comparable for the studied academic literature. However, a few important notes have to be made.

First, one must keep in mind that different evaluation methods have been used. Both Papaioannou and Siourunis (2008) and Giavazzi and Tabellini (2005) conducted a Difference-in-Difference estimation, which does not control for any control variables. The underlying assumption in the Difference-in-Difference model is that all other mechanisms will grow just as fast for the treatment group, democracies, as for the control group, non-democracies. If this assumption is violated, it is likely that the effects depicted to democratization are overestimated.

Secondly, it is worth stressing that Persson et al. (2006) did run their Cross-Country regression based on permanent democratizations, not on shifts in the running democracy variable. Not permanent changes in regime are not considered although these shifts are also potentially useful when evaluating the relation between democratization and economic growth.

Lastly, I would like to highlight that comparing all these different studies can give meaningful insights, but that one should be careful with comparing the coefficients of the studies, since all studies differ in some extent, and do not use the exact same definitions.

When keeping these remarks in mind, it still seems a plausible conclusion that these studies all more or less find that the short-term effects of a democratization are small, but mostly significant and positive.

The estimated coefficients for capital are displayed in table 4 in the appendix. From this table one can obtain that all studies have estimated positive coefficients for capital, which is no surprise, since capital accumulation is one of the main drivers of economic growth.

The estimated coefficients for education show more variance, as one can see in table 5. These differences will be discussed in the result section in part II, when the differences between my own regression and those of the academic literature are discussed.

The estimated coefficients for international trade are displayed in table 6. The results of this mechanism are all positive, as one would expect, but differ very much in size. These differences in size are partly due to different measurement methods, but this will be covered in greater extend in the result section of part II of this bachelor thesis.

PART II- Quantitative research

Methodology and Data

The remaining part of this bachelor thesis will focus on the quantitative research I have conducted myself. Afterwards, the results of this research will be compared to the results of the studied literature.

Data

The data on the GDP, capital, trade coefficients and education come from the Penn World Tables (Feenstra, et al. 2015). This dataset contains national accounts data and is provided by a combined effort of the university of California and the university of Groningen. These data are publicly accessible and often used for research concerning changes in GDP or other national accounts.

The Penn World Tables contain information on the total physical capital stock of all countries listed in the dataset. The coefficient for trade is defined as the total value of exports and imports over GDP, to give an indication on how much a country takes part in international trade. The data on education exists of data on the average years of secondary schooling in each country.

The democracy score is coming from the Polity2 data series (2002). This series is often used in political science, including in many of the studies literature. All independent countries with over 500.000 citizens are reviewed on how democratic they are. The scores vary from -10 to 10, and are based on the competitiveness of elections, the nature of political participation and to what extent the executive authorities are checked. A score of minus 10 is the worst possible score, and 10 represents a full democracy.

To be able to potentially use the Log-values of the democracy scores, the range of the democracy scores had to be altered. Instead of a scale from -10 to 10, the data has been transformed to a 1-21 scale.

Some countries lacked a score for GDP, for different reasons. If there was no possibility to interpolate or otherwise impute this data in the dataset, the observations have been removed

from the dataset. This occurred for example for some eastern European countries, that were formed after the collapse of the Soviet Union in 1991. This also holds for lacking data on GDP per capita; only when there was no method available to impute the scores for GDP, the data had to be removed. This also mainly concerned countries that were formed during the research period 1960-2012.

Methodology

The relation questioned in this research, will be evaluated using a multiple cross-country regression method, with economic growth as the outcome variable, and democratization as the independent variable of interest. The economic growth will be measured as the 5-year average growth of the GDP per capita. This means that the growth between 1965 and 2012 will be split up in 5-year intervals. The initial growth between 1960-1965 will therefore be incorporated as a benchmark, that controls for the effect convergence may have on the economic growth.

By using the GDP per capita as the outcome variable, the growth effects that occur due to an increase in the labor supply are cancelled out.

In order to account for the effect capital accumulation has on economic growth, the growth in capital stock will be measured as 5-year averages, just as the economic growth variable.

To account for all other factors that could potentially impact GDP per capita, but that are not relevant for the evaluation, country fixed effects will be incorporated in the regression.

Combining all this information yields the following regression

$$GDP\ growth = \beta_1 D_{c,j} + \beta_2\ C_{c,j} + \beta_3\ T_{c,j} + \beta_4\ E_{c,j} + \theta_c + \in$$

GDP growth   *The 5-year GDP per capita growth for country c in year j+5.*

$D_{c,j}$ *Democracy score for country c in year j.*

$C_{c,j}$ *Capital stock growth country c in year j+5.*

$T_{c,j}$ *Trade ratio for country c in year j.*

$E_{c,j}$ *Education index for country c in year j.*

θ_c *Country fixed effects*

$\in$ *Error term*

Results

The results from the multiple regression are displayed in table 1. The results will be discussed for each separate control variable in the coming section.

Democracy

The democracy coefficient shows a positive and significant value of 0,283. This indicates that the 5-year economic growth increases by 0,283% when the score for democracy increases with 1. This coefficient is significant under the 5% significance level. These results seem to be in line with other results in this field of research. As discussed in the literature review, most quantitative evaluations of this research questions show small but positive results.

Since the conducted method is a Cross-Country regression, it would be the most valuable to compare the obtained results with the other Cross-country regressions.

The obtained results from the regression performed in this thesis are very much in line with the predictions made by the studied Cross-Country regressions. The obtained coefficient for the democracy variable is a bit higher than predicted by the models of Barro (1996), Gerring et al. (2005) and Persson et al. (2006). This could be the result of the circumstance that Barro used a more extensive set of control variables, through which a democratization may have an effect on economic growth. The deviations from the estimates from Gerring et al.(2005) could have emerged because, as stressed before in the literature review, the research by Gerring et al. (2005) focuses mainly on how long a country has been a democracy, while the researched conducted in this paper did not distinguish how long a country has been a democracy. To conclude, the deviations from this bachelor thesis to the results obtained by Persson et al. (2006) could come from the fact that Persson et al did not look at the level of democracy in each year, but on the regime changes that occurred.

Trade

As predicted by the academic theory on economic growth, trade seems to have a positive influence on the 5-year economic growth. The coefficient has a significant value under the 5% significance level of 32,063%, so countries seem to have experience over 32% more growth on a 5-year average when the trade variable increases with 1. However, when interpreting these results, it is important to keep in mind that the variable trade in this research is defined

as the total value of exports and imports over GDP. An increase of 1 in this ratio would mean that the combined exports and imports would be as big as the GDP in a certain year.

The coefficients academic literature assigned to international trade are included in table 6. These results are quite different than the one obtained in the self-conducted research.

Many of the studied research use a variable for Trade Openness similarly to the research I executed myself, namely by dividing the total value of exports and imports by total GDP.

This difference could at least partly be explained by the observation that most of these researchers added multiple coefficients for trade to their estimation. Papaioannou et al (2008) added two lags of trade share and a contemptuous trade share variable, which may cause the trade variable to be underestimated.

The most valuable comparison can be made with the results of Gerring et al. (2005), since this research also used the trade openness as described in the Penn World Tables. Besides the trade share from the Penn World Tables, the researchers also controlled for trade when including the growth per capita, which was trade weighted. This may also lead to an underestimation of the trade variable.

Education

The coefficient for this part of the regression has a value of 2,423. This means that when the average years of schooling as described in the Penn World Tables increases with one year, the 5-year economic growth can expand with 2,423%. This seems to be in line with the economic theory on economic growth, as described in the theoretical framework earlier in this paper.

In table 5, all the coefficients related to education have been listed. However, comparison of all these different measures is hard, since all researchers tend to use slightly different ways to measure the effect of education.

Acemoglu used a comparable method as used in this thesis: the average years of secondary education in a country. Barro (1996) used a different approach. He distinguished the education attendance of men and women. This also explains the large variance in table 5. The education attendance of women yielded a result of negative 0,012, while the male attendance was estimated to be 0,016. The reasons behind this difference will go beyond the scope of this paper.

Another interesting measurement came from Gerring et al. (2005), who accounted for education by using the rate of illiteracy in a country. Since illiteracy is of course not an indicator for a good educational system, the negative coefficient can be interpreted as a positive effect of education on economic growth, just as predicted by theory. Persson and Rodrik did not explicitly account for the effect of education but incorporated it in their fixed effects estimation.

The results from the performed regression can most usefully be compared to the findings of Acemoglu, since this paper used the same method to measure education. The coefficient obtained in our regression appears to be higher than the one obtained by Acemoglu et al. (2019). This difference could partly be the result of the fact that Acemoglu focused on secondary school enrollment, and the Penn World Tables data as used in the self-performed regression is based on attended school years in both primary, secondary and higher forms of education.

Capital

Lastly, the coefficient for capital growth is estimated to be 0,260. When the 5-year capital stock growth increases with.1%, the 5-year economic growth increases by 0,260%. The positive relationship between economic growth and capital accumulation cannot come as a surprise, since this is one of the main predications of the neoclassical growth theory.

In table 4, the coefficients related to capital are shown. These results are mainly in line with the coefficient that has been found in the self-conducted regression. However, almost all reviewed papers have controlled for capital by looking at the investment rate, while I added the 5-year growth/decline in the capital stock to the Cross-Country regression. This makes it harder to compare the coefficients and explain their differences. However, since the results are broadly in line with the findings in previous literature, this does not seem to be a reason for concern.

Part III- conclusions & discussion

Conclusion

Based on the quantitative research I have executed in this bachelor thesis, in combination with a literature review, I can conclude that democracy has a small but significant effect on economic growth. The results coming from the cross-country regression indicate that when a country experiences an increase in their level of democracy, the economic growth rate will be higher. This conclusion also holds after controlling for a set of control variables.

Based on the economic literature on this topic I can make several additions to this conclusion. Several scholars have found that a swift in regime does not have the same effects for all countries, but that this is co-dependent on the initial level of democracy in a country.

Discussion

There is not one 'golden path' to measure the effect democracy may have on economic growth, so therefore there are some things to discuss on this matter. A common critique on papers that look into this relation, is that one can never completely rule out the existence of collinearity. When interpreting the results, one must always keep in mind that a countries democratic status could also change due to favorable economic circumstances, instead of the other way around.

Additionally, one could wonder how these results were to change if different measures of democracy were being used.

Suggestions for future research

The academic debate on the effects of democracy on economic growth is still ongoing, and the main question has not convincingly been answered. It would be interesting and a contribution to the existing literature if future research would not just focus on the broad effect of democracy and economic growth, but to specific mechanisms through which democracy can have an effect on the economic growth. Past researchers have suggested multiple mechanisms through which democracy could potentially influence economic growth. Another aspect on this topic that could use more research, is the mentioned issue of collinearity. There are several econometric techniques available to look into possible

collinearity that go beyond the scope of this bachelor thesis, but that could be very useful in understanding how the democratization of a country can be of influence on economic growth.

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Appendix

Title paper	Author	Used methods	Type of data	Conclusion
Democracy Does Cause Growth	Acemoglu et al.	Lineair regression, Instrumental Variable	Panel-Data	Long term effects are significant around 20-25%
Democracy and Growth	Barro	Cross-Country regression	Panel-Data	Countries that initially are very undemocratic seem to benefit, while higher income countries do not benefit from an increase in democracy.
Democracy and Economic Growth: A historical Perspective	Gerring et al.	Cross-Country regression	Panel-data	Significant, little positive effects
Political regimes and Economic Growth	Przeworski et al.	Theoretical arguments and a summary of previous empirical research	Around 20 empirical studies	Inconclusive.
Democracy and Economic Growth: A Meta-Analysis	Doucouiagos et al.	Meta-Analysis	483 estimates, coming from 84 studies.	Democracy does not have a direct impact on economic growth, but significant and positive indirect effects.
Do Democratic Transitions produce Bad Economic Outcomes?	Rodrik et al.	Cross-Country regression	Panel-data	Little positive, yet insignificant effects.
Democracy and Development: The Devil in the Details	Persson et al.	Cross-Country regression	Panel-data	Small, significant results.
Democratization and Growth	Papaioannou et al.	Difference-in-Difference estimation	Panel-data	Positive, but largely insignificant effects.
Economic and Political Liberaliation	Giavazzi et al.	Difference-in-Difference estimation	Panel-data	Small,positive significant results.

Table 1. Overview of Results.

	Coefficient	95% confidence interval	
Democracy	0,283**	0,125	0,441
Trade	32,063**	25,257	38,869
Education	2,423*	-0,046	4,829
Capital	0,260**	0,246	0,274
Constant	-3,807	-8,387	0,772
OBS	5.244		

*Table 2. Results of the Cross-Country regression, with country Fixed Effects. * Significant under the 10% significance level. ** Significant under the 5% significance level.*

Title paper	Author(s)	Result
Democracy Does Cause Growth	Acemoglu et al. (2019)	1,79% extra growth in the short term.
Democracy and Growth	Barro (1996)	-0,074 for initial rich countries, and 0,053 for initial poor countries.
Democracy and Growth: A Historical Perspective	Gerring et al.(2004)	0,007
Democratization and Growth	Papaioannou et al. (2008)	Values between 0,887 and 1,158*
Democracy and Development: The Devil is in The Details	Persson et al.(2006)	Values between 0,70-0,81.
Do Democratic Transitions Produce Bad Economic Outcomes	Rodrik et al. (2005)	0,216**
Economic and Political Liberalizations	Giavazzi et al. (2005)	Between 0,34-0,78.

*Table 3. Democracy Coefficients for the studied literature. *Papapioannou uses multiple methods in his paper. When using a Cross-country regression, he found an effect of about 0,887, and when using a Difference-in-Difference method a value of about 1,158 was found. ** The overall effect appears to be about 0,216. However, when distinguishing both new- and established democracies, the new democracies tend to have a slightly higher effect between 0,425 and 0,890, depending on the exact model specification.*

Title	Author(s)	Result
Democracy Does Cause Growth	Acemoglu et al. (2019)	0,82
Democracy and Growth	Barro (1996)	0,023-0,035
Democracy and Growth: A Historical Perspective	Gerring et al. (2004)	0,023
Democratization and Growth	Papapioannou et al. (2008)	0,146
Democracy and Development: The Devil is in The Details	Persson et al. (2006)	-*
Democracy and Development: The Devil is in The Details	Rodrik et al. (2005)	-*

*Table 4. Capital Coefficients for the studied literature. *This research did not include a variable for Capital.*

Title	Author(s)	Result
Democracy Does Cause Growth	Acemoglu	1,345
Democracy and Growth	Barro	-0,012-0,016
Democracy and Growth: A Historical Perspective	Gerring	-0,0446
Democratization and Growth	Papapioannou	0,146
Democracy and Development: The Devil is in The Details	Persson et al. (2006)	-*
Democracy and Development: The Devil is in The Details	Rodrik et al. (2005)	-*

*Table 5. Education coefficients for the studied literature. *This research did not include a variable for education.*

Title	Author(s)	Result
Democracy Does Cause Growth	Acemoglu	22,7
Democracy and Growth	Barro	0,14
Democracy and Growth: A Historical Perspective	Gerring	0,041
Democratization and Growth	Papaioannou	0,041
Democracy and Development: The Devil is in The Details	Persson et al. (2006)	-**
Democracy and Development: The Devil is in The Details	Rodrik et al. (2005)	-**

*Table 6. International trade coefficients for the studied literature. *This research did not include a variable for international trade.*

Title paper	Author	Kind of variable	Data source
Democracy does cause growth	Acemoglu et al.(2019)	Continuous	Polity IV and Freedom House.
Democracy and growth	Robert Barro (1996)	Continuous	Gastil et al. (1982, 1983)
Democracy and Economic Growth: A Meta-Analysis	Doucouliagos et al.	Continuoous/categorical	Poilty IV
Economic and Political Liberaliations	Giavazzi et al.	Continuous	Polity IV
Democracy and Economic Growth: A Historicsal Perspective	Gerring et al.	Continuous	Polity IV
Do Democratic Transitions Produce Bad Economic Outcomes?	Rodrik et al.	Categorical	Polity IV
Democracy and Development: The Devil is in the Details	Persson et al.	Categorical	Polity IV
Democratization and Growth	Papaioanou et al.	Categorical	Self-constructed, mainly based on Polity IV and Freedom House.

Table 7. Overview of the democracy indeces used in academic literature.

In favor of democracy	8
In favor of autocracies	8
No difference	5

Table 8. Results of a Meta-Analysis, executed by Przeworski et al. (1993).