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The relationship between change in form of government and economic growth after the end of the Cold War

A panel data regression analysis

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Abstract:

This study aims to examine the relationship between the form of government and economic growth in the post-Cold War period. This is done with a panel data analysis, containing cross-sectional units of 145 countries with a time period ranging from 1995 to 2018. The regression model uses growth of gross domestic product per capita as the dependent variable, and Polity score change, total investments, economic freedom and change in mean years of schooling as the independent variables. The study found a statistically significant relationship between change in form of government and economic growth, but this relationship becomes less clear when more independent variables are included. The results suggest that a relationship between form of government and economic growth may rather depend on the policies enacted, and these policies may not be exclusive to one form of government.

Keywords: democracy, autocracy, economic growth, GDP per capita

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1. Introduction

The number of democracies has followed a positive trend, relative to the number of autocracies, for over a century (Coppedge et al., 2019) and in 2002 the number of democracies surpassed the number of autocracies present in the world. Many academic studies have been conducted to better understand this phenomenon. The post-World War II era, including the Cold War, saw a growing interest in potential advantages held by democracies when compared to autocracies. In addition to the various freedoms and rights often associated with democracy, such as freedom of speech, it has been argued that democracy may also entail a stronger economical performance, when compared to more autocratic forms of government.

The relationship between democracy and economic growth has been well studied since the end of World War II, and there was renewed interest in the subject following the Soviet Union's collapse and the third democratization wave (Huntington, 1991). However, the relationship between the form of government and economic growth remains unclear. The results of previous studies are not consistent and conclusive, often but not always favoring democracies. This suggests that further studies can contribute to a better understanding of the relationship between a country's form of government and economic growth, and how governmental trends can impact economic development. Additionally, the post-Cold War period remains much less studied in this regard than preceding centuries. This study aims to contribute to improved understanding, through additional statistical analysis and the use of recent statistical data.

Przeworski and Limongi presented an overview of the research field in 1993 including studies from 1966 to 1992. Some of the studies examined found that democracy was better for economic growth, while some studies found a better performance with autocracy, and some studies did not find any statistically significant relationship between form of government and economic growth (Przeworski & Limongi, 1993).

A later study found that the initial level of democracy could affect the economic growth gains of a democratizing country (Barro, 1994). Essentially, the economic growth gains from adopting more democratic characteristics seemed to be greater for countries starting at a low

level of democracy than for countries with an already high level of democracy, potentially suggesting a non-linear relationship with decreasing returns.

It has been argued that autocratic countries may have advantages over democratic countries in terms of what policies they can use to promote greater economic growth. This is sometimes referred to as the “Lee thesis”, after Lee Kuan Yew who held the office of prime minister in Singapore from 1959 to 1990. The post-World War II rapid economic growth of the Asian “tiger economies”, South Korea, Taiwan, Hong Kong and Singapore, has been mentioned as potentially supporting that hypothesis. However, the results of a study of 20 Asian countries did not find empirical support for the hypothesis that dictatorship was better than democracy at producing economic growth, although the study did note that those autocracies did tend to have a greater total investment but lower enrollment in higher education (Knutsen, 2010).

A more recent study by Acemoglu, Naidu, Restrepo, and Robinson (2019) provides some support for democracy having a positive effect on the gross domestic product (GDP) per capita. They also found that less developed economies did not seem to be hampered by democracy, as far as economic growth was concerned.

Contrary to this lack of a scientific consensus on the matter, there remains a belief that democracy is a better form of government for economic prosperity. The sustained rapid economic growth of China, now the country with the second largest GDP in the world (Utrikespolitiska Institutet, 2020), presents a challenge to this belief and suggests that further studies are still needed.

While the choice between democracy, autocracy or something in between has implications for all aspects of society, economic growth is vital to the survival and development of countries (Sen, 2021). The remaining uncertainty regarding the relationship between form of government and economic growth, as well as the possibility that the relationship may change as the world progresses and changes in various ways, means that there is still need for further studies of the subject.

In this thesis there are ten sections. Section 2 involves a literature review. In section 3 the theoretical framework is presented and in section 4 the research methodology is introduced. Section 5 provides information on the data used in the panel regression analysis. Section 6

elaborates on the results of the thesis. In section 7 the results are discussed and in section 8 the conclusions are presented. Section 9 shows all the references to previous research. Section 10 presents all the appendices of tests and countries used in the study.

1.1. Purpose and research objective

This thesis aims to further examine the potential relationship between countries' form of government and their economic growth, with a focus on the post-Cold War decades. This is done with a panel data analysis containing cross-sectional units of 145 countries, with a time period ranging from 1995 to 2018, to answer the main research question of this thesis: "Does a change in form of government have an effect on economic growth in the post-Cold War period?"

The purpose of the thesis is primarily to contribute to the understanding of the potential economic implications of a change in the form of government. As the potential relationship between these remains uncertain, the study primarily concerns the potential statistical relationship and does not aim to identify and explain all potential mechanisms through which such a relationship may arise. Economic growth is measured as growth of GDP per capita and the form of government is measured through the Polity scale, ranging from fully autocratic to fully democratic. In this thesis the selection of additional mechanisms used to further examine the relationship between form of government and economic growth is limited to the following: total investments, change of average length of education, and economic freedom. Other independent variables, such as corruption and life expectancy, were originally considered for inclusion in the model but were removed due to issues with multicollinearity. The variables have a more thorough description in section 5 of the thesis.

2. Literature review

This section gives an overview of the various concepts used and issues with defining them, and discusses the differences between forms of government in regards to economic growth.

2.1. Economic growth

In the literature the definition of economic growth is broad, but in general terms it concerns an increase of the total production of goods and services; in the case of a single country, an increase of the GDP. Various organizations, such as the World Bank, monitor GDP developments to get a sense of annual economic growth rates. The GDP growth rate can be calculated as the difference between two given years, the value of which can be positive or negative and is often stated as a total number or percentage change. For instance, the GDP of 1996 can be subtracted from the GDP of 1997 to yield the total change in production during 1997.

The GDP measure is not without limitations and potential shortcomings. Unpaid labor, such as internships, is not included in GDP and the same goes for labor that involves undeclared work and other black market economical activity, as the nature of such activities make them difficult for others to appraise (Callen, 2020). Although there are arguably many issues regarding the GDP measurement, it remains the greatest measure of economic growth available (Sandelin, 2005).

Since the GDP measurement regards the total production of goods and services in a country, it ultimately depends on the productive resources available to and employed by that country; natural resources, human resources, and capital goods. These fundamental categories can in turn be regarded as the products of more specific factors; for instance, “human resources” is a product of population size, demographic composition, education, health, culture, laws, taxes, subsidies, et cetera. Then, logically, GDP growth ultimately reflects changes in these factors and how they interact to produce economic productivity. It has previously been suggested that GDP per capita is affected the most by GDP, population, transparency and education, while other factors such as form of government can also contribute (Ilter, 2017). As several of the factors underlying productivity are influenced by government policies, and government policies in turn are influenced by the form of government, a country’s form of government can influence how that country achieves productivity and how that productivity grows.

2.2. Defining democracy

Democracy literally means “people rule”. The definition of democracy is rather complex and varies depending on the organization and people affected by it. In general terms, a defining characteristic of a modern democracy is the right to vote for each citizen of the country. In practice, however, the existence of elections is not sufficient for a country to be considered a democracy; the implementation of the right to vote, and the fairness of elections, can differ substantially from country to country. Various countries have a nominal right to vote but are still not considered democracies because of violations of human rights.

Previous literature shows variations in the way of measuring democracy, which may be due to the fact that there is no universal consensus on the definition of democracy. One definition of democracy was offered by Joseph Schumpeter, who referred to the lowest level of democracy and suggested that the requirements should mainly concern elections. To be considered the lowest level of democracy, free and fair elections as well as the possibility of every citizen to be a candidate for political institutions, must be achieved (Acemoglu & Robinson, 2005, pp. 48-88). This definition has been subject to critique, such as countries being able to meet the requirements of Schumpeter’s democracy definition while simultaneously being non-democratic in regards to other essential characteristics of democracy, such as freedom of speech and freedom of the press (Diamond, 2002; Bidner et al., 2014). The European Court of Justice offers a definition closely related to that of Schumpeter; to be considered a democracy a country must practice free and fair elections and the citizens must be allowed to criticize political ideologies and parties openly (Diamond 2002).

Another definition of democracy, building on Schumpeter’s definition, has been suggested by Robert Dahl who argued that the existence of free and fair elections is insufficient for a country to be considered a democracy. The argument is made through Dahl’s “polyarchy” which adds other characteristics, one being that governments should value what makes elections and policies important, hence protecting the importance and legitimacy of elections. If elections are neglected, by low voter turnout or low trust in the electoral system, the elections could be perceived as pointless. The democracy values according to Dahl are divided into base and ideal requirements (Dahl, 1973). The basic requirements, the lowest

level of democracy, are the implementation of free and fair elections, a multi-party system, and universal suffrage. While the highest level of democracy, which no country has achieved according to Dahl (1973), is ambiguous and can vary depending on the reader, it could be considered as continuing to build on the basic requirements of democracy.

2.3. Defining autocracy

Autocracy, contrary to democracy, refers to a state or country ruled by one person with absolute power. In the literature, however, the modern definition of autocracy is ambiguous. Political scientists have mainly focused their attention towards the research of democracy, leading to fewer studies being conducted regarding autocracy. Furthermore, the studying of autocracy can be difficult as internal politics usually are not transparent and therefore not open to the public view (Lewis, 1978). Free press and free public opinion are often either not allowed in these countries, or at least severely restricted. Censorship is a common characteristic of autocracy, as is propaganda sponsored by the government, making it even more difficult to obtain reliable and accurate data regarding autocracies (Magee & Doces, 2015).

As with democracy, previous literature exhibits many different ways of measuring autocracy. This may be due to the absence of a consensus on the definition of autocracy. Juan Linz (1964) explains autocratic regimes as political systems which are limited, non-accountable, not necessarily with a leading ideology but often with very distinctive mentalities, and in which a leader (a person or a group) exercises the power held. This definition implies that the power of the regime is concentrated, the masses (the people) are not mobilized, and political pluralism is limited or not prioritized. Other authors have emphasized other factors as defining autocratic regimes, such as a lack of representation and the absence of an electoral process (Acemoglu & Robinson, 2005, p. 17; Brooker, 2000).

Furthermore, the definition of autocracy is evolving. Brooker (2000) describes the “modern” autocracy as having different characteristics than the “old” one. The implementation of elections could hypothetically lead to monarchs or sole autocrat leaders not having the absolute power and shift a country closer to democracy in the Polity autocratic-democratic evaluation scale, while still practically remaining an autocracy. However, autocracies can use nominally democratic institutions to obscure the reality of the country’s condition and appear

more democratic than they are (Diamond, 2002). For instance, elections can be held with the possibility of opposition to attend and be a part of the parliament, but in reality the elections are not “free and fair” which is incompatible with the fundamental values of democracy.

2.4. Economic growth and form of government

While the aim is to examine the relationship between government and economic growth, using the causal model presented in 3.2.1, the potential reverse correlation still needs to be assessed. The question is whether the state regime predicts economic growth or if economic growth leads to a democratic or autocratic government.

Seymour Lipset (1959) explains that education, urbanization, industrialization and a population with great health, when combined, lead to pressure for states to undergo democratization. These building blocks of democracy have been linked to economic growth; when countries’ economic growth increases, they in turn are more likely to undergo democratization (Bollen, 1979). The greatest threat to democratization would be extreme poverty (Londregan & Poole 1990).

Przeworski and Limongi (1997) further discuss the effects of economic growth on the level of democracy. They use the theory of modernization, originally constructed by Lipset (1959), as their basis in explaining the relationship between form of government and economic growth. The authors explain that it is unlikely that an autocratic regime with extreme poverty will undergo any democratic changes. Conversely, a strong economic performance increases the popular support for the government, whether democratic or autocratic. Economic growth stabilizes the state and its regime, enabling longer-lasting governments, democratic or autocratic, as long as the country remains prosperous.

Feng (1997) also argues that economic growth leads to political stability in both democracies and autocracies with elections, as the party or leader in power is unlikely to lose popular support if they produce economic growth. The risk of being overthrown through a coup is also minimized for other autocratic regimes during economic growth, creating an incentive for these regimes to promote growth (Londregan & Poole, 1990).

2.5. Form of government and economic growth

In his modernization theory, Lipset (1959) explains that the relationship between democracy and economic growth is a bit more complex than comparing GDP and the form of government of a country. The importance of other variables such as level of education, industrialization and urbanization should also be included to capture the entire relationship. In his study, the results suggest that democracies are much more advanced and developed in these areas compared to autocracies, especially in the level of education which is considered a key factor in becoming and remaining a democracy.

Przeworski and Limongi (1993) have conducted an overview of the research field with studies from 1966 to 1992. Similarly to the review in section 2.4, the authors explain that both democracies and autocracies will remain and not undergo any changes if they exhibit economic growth. The reasoning behind this, according to Przeworski and Limongi (1993), culminates in the economic welfare of the state, creating satisfaction and trust between the people and the government, which minimizes the risk of conflicts within the society.

Przeworski and Limongi (1993) also discuss a key factor behind superior economic performance of many East Asian countries, a phenomenon they call “state autonomy” or “developmentalism”. In general terms, it entails creating a strong internal market with high tariffs on imported goods and the state having the capacity to uphold these policies. “Developmentalism” favors growth and, the authors argue, is only possible under autocratic rule as it allows sufficient “insulation” against particularistic pressures, especially from unions or large firms. “State autonomy” is therefore not possible in democratic states, as not taking these particularistic opinions into account violates basic democratic values.

Acemoglu et al. (2019) describe democratization as regional waves in the sense that if nearby or bordering countries undergo a democratization process, it is more likely for the others to follow. This is a reverse relationship, meaning that if nearby countries become autocratic, the risk of other countries following this trend increases. The results of the study, isolating the effect of democracy on GDP, indicates a robust and positive relationship with a GDP increase of 20% in the long run. Factors accelerating this increase in economic growth, the authors explain, come from democracies’ tendency to spur investments, education, reforms for economic growth, and improving fiscal capacity.

Foreign and domestic investments make up a greater percentage of the total GDP in democracies than in autocracies, according to a study by Przeworski (2004). The author explains this by the political stability present in democracies, which spurs investments. This reasoning is similar to that of Alesina and Perotti (1995), who described democracies as less risky for investors since acts of corruption, as sabotaging investments, by officials are less common than in autocracies. In a more recent study of democratization, the author suggests that increased economic growth in new democracies may be caused by “a substantial and immediate influx of foreign aid” (Hariri, 2013).

Gerring et al. (2005) examines the relationship between democracy and economic growth in a study made from a historical perspective, to avoid missing the effect of the accumulated democracy level due to a potential delay between implementation of democratic values (the democratization) and the effects thereof. The focus is mainly on the effects of physical, social, political, and human capital on economic growth, and the results indicate that democracies have the highest level of capital in each category. This could be explained by long-lasting democracies having had a longer time to increase their capital levels, hence increasing their economic growth. Autocracies meanwhile showed weaker levels of human capital, which could indicate similarly lower levels of economic growth.

Barro (1994) found, through a panel data analysis of 100 countries between 1960-1990, that the initial level of democracy could affect the economic growth gains of a democratizing country. Essentially, if a country had a lower level of democracy, economic growth gains from adopting more democratic characteristics seemed to be greater than the gains for a country with an already high level of democracy, indicating a non-linear relationship. He also assesses autocracy, explaining that autocracies that implement more democratic values can avoid the potential risk of corruption, or behaviors affecting the state negatively, and in return see greater economic growth than democracies that already have these characteristics. In a later study (Barro, 1996) he explains that institutional democratization leads to economic growth since it aids in avoiding misuse by officials and corruption, as well as non-democratic policies being implemented.

Barro (1994) further explains that democracy has indirect effects on economic growth, through increased consumption, free markets, rule of law, and human capital. However, when

these factors are held constant with the initial level of GDP per capita, the result on the economic growth is negative though minuscule. Barro (1994) gives critique to previous research on the subject as they have omitted variables, such as level of education, life expectancy, and rule of law. Leaving these variables out would create a positive relationship between democracy and economic growth while including them, as Barro (1994) has, gives a negative relationship. Barro (1996) emphasizes the importance of economic freedom, since free market, rule of law, and institutions prioritizing property rights has a robust positive effect on economic growth.

The literature review found that the research field has been approached in various ways. Most authors used panel data in their studies on the potential effects of the current form of government on economic growth while others, such as Barro (1996) and Hariri (2013), focused on the potential effects of democratization on economic growth. This informs the study design and choice of variables used in this thesis, which will focus on the effect on economic growth from changing the form of government in the post-Cold War era.

3. Theoretical framework

This section describes the theories on economic growth, reviewing the effects of state regime on economic growth as well as the causal model of the thesis. This is done in order to give a background about the current knowledge in the research field of government and economic growth and provide a background for the selection of the variables used in this thesis.

3.1. Theory on economic growth

3.1.1. Solow-Swan model or exogenous growth theory

The most renowned model, published by Robert Solow (1956), in the field of economic growth is the Solow model which theory has been invaluable in the field of macroeconomic theory. To give a depiction of the model, it shows that the economic growth of a country is dependent on the amount of labor, capital, and its technological development. It is the last one of the three that exhibits the greatest effect on economic growth, but capital is considered to be an important factor as well. As anyone with an economic background, the labor shall not be left out or considered to be less important than the other factors, but the efficiency of the labor force is also increased simultaneously with technological development, indicating that technological advancements is more desirable than an increase in the labor force.

Furthermore in the model, economic growth first appears when the capital is at the steady state-level, meaning that the amount of capital for each worker (labor) is constant over time. The technological advancements, as previously mentioned, increases productivity of the workers and capital in the long run, hence increasing economic growth (Solow, 1956). The reason why the Solow model is also referred to as the exogenous growth theory is that it does not explain where the technological advancements come from. Because of this the model has been subject to a lot of critique, even though it has demonstrated reliability in explaining why countries have varying levels of economic growth in the long run.

3.1.2. Endogenous growth theory

The endogenous growth theory, contrary to that of the Solow model, instead explains economic growth as something generated from within, endogenously. This theory gives an explanation to the reasons behind the economic growth that the Solow model has gotten critique for, explaining that investments in innovation and the human capital creates constant economic growth which in turn increases technological development. As many other authors

in this thesis have concluded, the human capital affects the country's economic growth through the level of education.

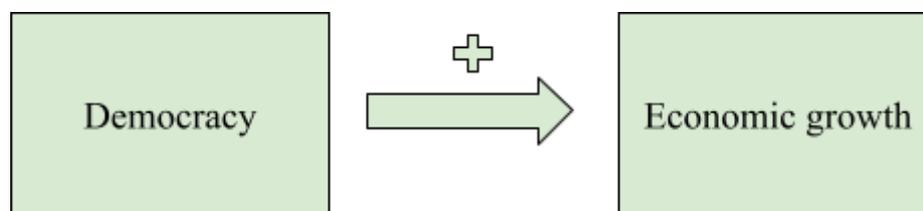
The endogenous growth theory agrees with the Solow model regarding the importance of technological development for increased economic growth but offers an explanation of the factors behind it, such as human capital which contributes to development of technology as well as making capital more efficient for workers to use. Mankiw (2013) also reminds us that foreign investments are key for technological development because it spurs technological knowledge.

3.2. The effects of state regime

3.2.1. Causal model

Based on the studies and articles made by previous researchers, such as Acemoglu et al. (2019), Barro (1994), Przeworski and Limongi (1993), and Gerring et al. (2005), the most common causal model used is represented below:

Figure 1: Causal model



Source: Authors' own graphic representation, adapted from the literature mentioned above.

This study uses a similar causal model, where a change in form of government (towards democracy or autocracy) causes a change in economic growth, for approaching the research question, which is beneficial in keeping the results relatable to those of previous studies.

3.2.2. Peace and war

As seen throughout history, the most prosperous times have always been during times of peace, while war-time instead has proved the opposite because of capital being destroyed and economic growth decreasing or staggering. Owen (1994), even explains that there has never been a war where two democratic states have engaged in war against each other. All the wars have been fought between autocracies, or one democracy and one autocracy. Generally,

democracies tend to not engage in wars or potential conflicts of war when compared to autocracies, which could be because of the cost of wars and the possible profits (Coleman, 2004). An autocratic ruler can personally gain much from wars, while a democratic state instead has to consider democratic values and the preferences of their citizens, who tend to be the ones who would be fighting the wars.

3.2.3. Power and corruption

All governments around the world have had or have problems with corruption. Nonetheless, democratic states tend to have lower levels of corruption because of mechanisms associated with democracy, like accountability of politicians (Adserá et al., 2003). But this presumes that the state has a strong and stable democracy with institutions working properly. Otherwise the effectiveness of combating corruption in democracies fails. However autocracies tend to be less stable and unpredictable than democracies (Przeworski & Limongi, 1993). The risk of behavior considered corrupt among officials, as sabotaging policies, subsequently increases when the government becomes unstable (Alesina & Perotti, 1995).

Corruption is a moral hazard problem that every government tries to control and minimize, still the possibility of this varies from country to country. Corruption does affect the state's economic growth negatively, one of the more common ones is investments being less productive due to mismanagement and companies growth potential suffering because of business opportunities being lost due to fear of corruption (Chêne, 2014). Furthermore, corruption undermines the rule of law and the legitimacy of the government because of bribes creating lower trust among the citizens (ibid), which can lead to political instability.

3.2.4. Investments and political stability

Political stability and investments are closely related, as countries with political stability and low levels of corruption tend to get more investments (Busse & Hefeker, 2007), and both are possible factors of technological advancements (Herzing et al., 2008), hence economic growth. Their opposites, political instability and a decrease in domestic and foreign investments, instead leads to lower economic growth in the long run (Alesina et al., 1996). The reason behind the decrease in investments lies in the fact that politically unstable countries change legislation which increases economic volatility which creates uneasiness that hampers economic growth. With economic markets showing high volatility, the risks increase for investors getting any yield from their investments. Stable political countries tend

to have less volatility that creates greater returns, something that is more common in democracies (Busse & Hefeker, 2007). Autocracies on the other hand are less stable and unpredictable in their implementation of laws and can neglect particularistic pressures from unions or large firms without getting any mischievous effects from the people (Przeworski & Limongi, 1993).

3.2.5. Education and economic growth

Education is considered a part of the human capital that previous researchers emphasize as vital for economic growth through an increase in productivity and innovations of technology. Both Lipset (1959) and Acemoglu et al. (2019) have mentioned the importance of education for economic growth. They also pointed out that democracies are superior in enrollment for education than autocracies. A study by Knutsen (2010) also noted that higher education was less common in autocracies.

Education also increases the productivity of workers, also creating an effectivization of capital which directly affects the productivity and utilization of all workers, which is the case with technological advancements (Lucas, 1988). Further education tends to increase the income per capita which could be indirectly linked to an increase in consumption creating greater GDP per capita growth, hence an increase in economic growth. A paper produced by the Organisation for Economic Co-operation and Development (OECD) noticed that, for OECD countries, the rising productivity of the workforce was responsible for over half of the GDP per capita growth, between 1994 to 2004 (OECD, 2006).

Education also helps to increase the human capital by creating better health for educated people which both increases physical and mental health as well as life expectancy. OECD (2006) have found that educated people tend to seek healthcare more often than uneducated people, the income of educated people tends to be higher than that of uneducated people which can (if healthcare is not provided by the government) aid in seeking healthcare because of the possibility to pay for it without getting in debt. Furthermore, educated people tend to consume less amounts of alcohol, smoke less and exercise more. As Barro (1994) mentioned previously, life expectancy is one key factor in GDP per capita growth which education evidently promotes.

4. Empirical methodology

This section describes the empirical strategy and the limitations associated with it.

4.1. Research methodology

This thesis aims to further examine the relationship between form of government and economic growth, through a quantitative study based on an econometric analysis using time series data and cross-sectional units that facilitate a panel data analysis.

Only independent countries with available data during this time period were included in the study. In the sample there were some countries that did not have complete data for some of the years in the studied time period. When the gaps in the data were not significant enough to affect the model's reliability negatively the data was included. Countries with too few remaining values (less than 5 years with data from each variable) were instead excluded from the sample. The data was collected from different sources such as the World Bank, the Heritage Foundation, and the Center for Systemic Peace (Polity V) and assembled as a single dataset used for this thesis. The final sample contains data from 145 countries around the world (see Appendix 1 for a full list), with a time span ranging from 1995 through 2018.

There have been several studies on the relationship between form of government and economic growth during post-World War II time periods, including the Cold war. The fall of the Soviet Union marked the end of the Cold War and also facilitated further advancement of the American Bretton Woods system as the leading monetary system. Following the end of the old world order there was a new time period of economic advancements, increased globalization of the economies of the world, and sustained rapid economic growth in some countries, such as China and Turkey.

4.2. Data limitations

There are some concerns regarding the economic data used for the thesis, such as its reliability. Some autocratic regimes may have political or strategic reasons to obscure, manipulate or otherwise misrepresent important facts. It may also be difficult to get correct information from non-transparent countries since the investigator collecting the data might not have sufficient access to truly measure each country thoroughly.

As noted above, some countries are excluded due to lack of available data; see Appendix 1 for the complete list of countries included. For instance, the Polity V dataset included fewer countries than the economic growth data, necessitating the exclusion of all countries that were not included in both datasets. However, using the Polity dataset benefits the comparability of results with those from previous studies. The validity of the results may be limited by these exclusions of countries, although it should be noted that exclusions due to missing data is a common problem in studies of the relationship between form of government and economic growth. The large number of observations in the datasets further strengthen the reliability of the results.

5. Data

This section explains the process of data selection and describes the variables included in the thesis. Thereafter the equation used for the model is presented. Followed by tests for multicollinearity, autocorrelation, heteroscedasticity and stationarity.

5.1. Data selection

For this study, the chosen time period ranges from 1995 to 2018, starting after the collapse of the Soviet Union and subsequent transition, and ending before the outbreak of the COVID-19 pandemic. There are two main reasons for why this time period was selected. Firstly, it allows the study to focus on the time period that takes place after the collapse of the Soviet Union and the transition years that followed immediately thereafter, where some countries ceased to exist and others gained independence. The many country changes during that time would complicate the statistical calculations and analysis, and the potential uncertainties in the data from the several transitioning countries would further complicate the interpretation of the results. The time period ending before the outbreak of COVID-19 also avoids the complicated issue of how to interpret developments during the pandemic years. Secondly, the practical consideration that data availability was better from 1995 onwards.

The data and variables for this thesis were chosen based on the theoretical framework and the literature review, which offered valuable insights on important variables for examining the relationship between form of government and economic growth.

The data on the dependent variable, growth of GDP per capita, is retrieved from The World Bank whose main purpose is to provide knowledge and funding for developing countries (World Bank, 2021). The data contains information on GDP per capita growth from 1961-2020 (World Bank, 2020).

The data on the level of democracy and autocracy was retrieved from the Polity V project, constructed by the Center for Systemic Peace, that aims to provide information about characteristics of regimes. The data includes all independent countries with a total population of at least 500,000, from the time period of 1946-2018. Several previous studies have used Polity data, which is beneficial when relating findings to previous results.

The data on the other independent variables are gathered from various sources inter alia, The World Bank, the Heritage Foundation, and United Nations Development Programme. The purpose of including these additional independent variables is to avoid a potential spurious correlation between the form of government and GDP growth per capita (Teorell & Svensson, 2007). A more detailed description of the variables is provided in section 5.2.

Table 1: Descriptive statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
GDP	3150	2.507	4.773	-62.37805	121.7795
Polity	3150	.074	.552	-3	3
Investments	3150	24.031	8.764	.521	114.192
Education	3150	.102	.168	-2.1	2.9
Economic Freedom	3150	60.460	10.027	24.3	89.4

Source: Authors' own calculations.

Note: Descriptive statistics of the variables included in the study.

5.2. Variables

Testing for normal distribution showed that some of the variables were skewed, which is to be expected with data regarding for example GDP growth per capita. Non-normal distribution could also be the effect of insufficient amount of data for the desired variable. However, in the case of the panel data in this thesis, the number of observations is large enough to avoid the risk of insufficiency. An additional risk from the data not being normally distributed is that skewed data could result in heterogeneity of variance. However, a histogram evaluation of the distribution of every variable showed that the distribution was sufficiently adequate to continue the analysis.

5.2.1. Dependent variable

The economic data of this study is measured as annual percentage growth of GDP per capita and serves as the dependent variable. This data has been measured based on a local currency constant to the United States dollar as of 2010. This has been done by the collectors of the data, The World Bank along with OECD (World Bank, 2020). This study uses GDP per

capita instead of the traditional GDP measure to discount the effects of population growth from economic growth, which could produce biased estimates of the GDP. As the population increases the GDP tends to also increase, via an increase in labor force, but the per capita values might remain constant, decrease, or increase depending on whether the GDP increase is greater than the population growth.

5.2.2. Independent variables

The Polity data on the level of democracy and autocracy is retrieved from the variable “polity2” in the Polity V project, constructed by the Center for Systemic Peace, which provides information about characteristics of regimes. Countries are evaluated on a scale from -10 to 10, where a score of -10 denotes a strongly autocratic government while a score of 10 would be considered strongly democratic. All countries get a valuation of their democratic level between 0 and 10 and also an autocratic value ranging from a score of 0 to 10. The variable “polity” is next computed by subtracting the autocratic score from the democratic score. Finally, there are some special cases that are treated accordingly in the final “polity2” score: foreign “interruption” results in a missing value, interregnum or anarchy results in a score of 0, and years during protracted transition periods are assigned values representing a linear rate of change between the scores before and after the transition (Marshall & Gurr, 2020).

As described in the Polity5 dataset users’ manual (Marshall & Gurr, 2020), the Polity definition of democracy uses four different sub-variables. These variables are the openness of executive recruitment, the competitiveness of executive recruitment, the constraint on the chief executive, and the competitiveness of political participation. These sub-variables are categorized on different levels corresponding to different scores depending on the grading. The sum of the four sub-variables yields a score in the range from 0 to 10.

Autocracy is similarly defined by sub-variables, five in total. The variables are the competitiveness of political participation, the regulation of participation, the openness of executive recruitment, the competitiveness of executive recruitment, and the constraints on the chief executive. While the sub-variables are similar to those defining democracy, the categories in the sub-variables differ. Here, too, the sum of the sub-variables yields a score in the range from 0 to 10. As mentioned before, the final Polity score is derived by subtracting the autocracy score from the democracy score, yielding a score in the range from -10 to 10.

In this study, rather than using the yearly Polity scores as presented in the database, the values used in the model are calculated as 5-year moving averages of the current year and the preceding four years, provided that data is available for each year in the interval; if any of the five years includes a missing value for the specific country, the result is also treated as a missing value that year for the country.

The reasoning behind this design choice is that, given the lack in previous studies of a definite conclusion on whether there is a relationship between form of government and GDP growth, it is possible that a GDP benefit may manifest as the GDP developing along a higher level than otherwise, rather than at a higher rate. This would imply that GDP growth effects from the form of government might be difficult to detect in countries with unchanging forms of government, as their growth rate would not be affected; GDP effects would instead be easier to discern at a time when the form of government is changing, moving the country from one level of GDP to another and manifesting in the data as a temporarily higher GDP growth rate.

Furthermore, the design choice to use a moving average of several years, rather than only the change of Polity score from one year to the next, was based on an assumption that the effects on GDP growth from changing the form of government might not be instant but rather lag and be dispersed across several years. The economic effects of policy changes may not be immediate; impactful legislative changes may require several years of preparations; changes in investment behavior may not fully affect GDP growth immediately as it can take several years before investments yield benefits.

Investments can affect the GDP growth of a country and have therefore been included in the model. The data was retrieved from the International Monetary Fund, with measures of total investments as percentages of GDP. For a few countries, some years contained estimates rather than being labeled as missing data: the Syrian Arab Republic from 2010 onwards, Libya from 2014 onwards, Togo from 2016 onwards, and the Central African Republic, Chad, and Guinea-Bissau from 2017 onwards. These estimates were included in the study.

Education contributes to greater productivity in the workforce, which in turn contributes to the GDP of the selected country. The metric used for education in this study is the mean years

of schooling, transformed in the first difference. Rather than using the yearly values of mean years of schooling as presented in the database, the values used in the model are calculated as the yearly change. These values reflect changes in the availability of educated workforce contributing to the GDP. The data was retrieved from the United Nations Development Programme.

The data on “economic freedom” is based on the overall score of the economic freedom index, produced by the Heritage Foundation and measured through four key components:

1. Rule of Law
2. Size of the Government
3. Regulations
4. Open Markets

Delving deeper into the four key components there are 12 qualitative and quantitative sub-components or factors affecting the economic freedom measure. Each of the sub-components is graded on a scale from 0-100. When the grade for each sub-component is defined the score is averaged as an overall score for a country for each of the four key components which then is averaged as an absolute score for economic freedom ranging from 0 to 100. The four key components could have a positive effect on the GDP growth of a country, hence leading to a greater GDP per capita growth. Therefore it would be unfavorable to not include this variable in the model

5.3. Panel data

Panel data is a combination of cross-sectional data and time series data, useful for examining different units (in this study, countries), over an extended period of time. Advantages of panel data analysis over regular ordinary least squares analysis, or time series analysis, include smaller omitted variable bias and pooling of the data rather than analyzing them separately (Wooldridge, 2013).

When examining the causal relationship between the form of government and economic growth, for multiple countries and over an extended time period, it is preferable to analyze all countries at the same time rather than every country separately as that makes it easier to identify causal effects. Through multicollinearity between two or more variables, omitted

variable bias could affect the model used, but using a panel reduces the probability of this. A closer review of multicollinearity in the model is presented in 5.4.1.

The issue of heterogeneity will also be addressed. Time series and cross-sectional units are prone to changes over time while other variables remain constant over time, which would be an indication of heterogeneity in a model. Panel data supports the minimization of biases from heterogeneity by using both time-variant and time-invariant factors that can be controlled for (Baltagi, 2005).

Panel data models enable two alternatives in regression models, through fixed effects or random effects. A fixed-effects model is frequently used when measuring time-variant variables or ceteris paribus effects (Wooldridge, 2013). To determine which model to use in the regression model a Hausman test was conducted and the results supported the fixed effects regression model.

Table 2: Hausman test

Hausman test	P-value
H_0 : Difference in coefficients not systematic	0.0005

Source: Stata 16, test-statistics for Hausman.

Note: A p-value of 0.0005 indicates that the null hypothesis is rejected, therefore a fixed effects model is preferred.

The fixed-effects model can be used to examine data for unobserved time-invariant factors. There are no strong correlations between the independent variables (see Table 3), further multicollinearity (see 5.4.1) is not a problem in this model. The probability of some variables affecting the dependent variable through time-invariant factors is moderate and should only have a minuscule effect. The potential problem of non-stationarity is addressed in 5.4.4.

The retrieved data was collected from various sources and subsequently assembled as panel data for this thesis. The risk of the dataset being unbalanced is high. An unbalanced panel means that there are missing values for some of the variables, over time and country (unit).

This could be problematic if there is no comprehension to why the panel is unbalanced¹. To minimize this, only matching data for the same period of time and countries with enough data to fit the model is included. Also in Stata, the data is examined again to localize any abnormalities. Countries with too many missing values, such as North Korea and South Sudan, were instead excluded from the data panel to avoid misleading results. However countries that have a few missing values for some of the variables over the time period are still included. The panel for this thesis will therefore be unbalanced, but this should not be considered a problem since the reasons for this are known and understood.

As the Hausman test was significant and rejected the null hypothesis, fixed effects are preferable for the panel data regression. The structure of the given equation model for panel data with fixed effects is shown below:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + u_{it}$$

Y_{it} is the dependent variable and X_{it} denotes the independent variables. The cross-sectional unit is i while t equals the specified time period. α_i is the intercept (or constant) for the given time period. β_1 through β_4 are the coefficient values for the independent variables X_{it} . The error term, u_{it} , represents unobserved variables.

5.4. Model

The equation model used for the panel data regression is defined as:

$$Y_{PC_{it}} = \alpha_i + \beta_1 POLITY_{it} + \beta_2 INV_{it} + \beta_3 EDUC_{it} + \beta_4 EF_{it} + u_{it}$$

Y_{PC} is the GDP per capita variable. The independent variables are defined as the following: the level of democracy ranging from autocracy to democracy (POLITY), total investments (INV), mean years of schooling denoted as education (EDUC), and economic freedom (EF).

¹ Carlo Lazzaro (2018) on the Statalist.org forum, has commented that there is no problem with an unbalanced panel as long as there is comprehension to why the panel has missing values, in this case because of difficulties for the sources to gather reliable data. Further, he also explains that Stata can handle an unbalanced panel without problems.

<https://www.statalist.org/forums/forum/general-stata-discussion/general/1455040-unbalanced-panel-data-analysis>

All of these variables have a cross-sectional unit, i , which equals all the countries included in the study, and a specified time period, t , encompassing the years from 1995 to 2018.

5.4.1. Multicollinearity

Multicollinearity refers to the presence of significant intercorrelations among the independent variables in a model and weakens the analytical value of the results. A rule of thumb for avoiding multicollinearity is that the correlation coefficient between independent variables should not be greater than 0.8 or less than -0.8 (Gujarati & Porter, 2009, p. 338). A correlation matrix is presented in Table 3, displaying all correlation coefficients for the variables used in the model. The matrix suggests there is no high degree of correlation between the variables. To further test the risk of multicollinearity in the model, a Variance Inflation Factor (VIF) test was also performed, estimating the variance of variables based on the interactions of other variables as seen in Table 4. VIF values between 5 and 10 are considered problematic (Craney, 2007). The mean value obtained was 1.00, with a top value of 1.01, indicating no multicollinearity to be present in the model.

Table 3: Correlation matrix

Variables	GDP	Polity	Investments	Education	Economic Freedom
GDP	1.0000				
Polity	0.0536	1.0000			
Investments	0.2351	-0.0002	1.0000		
Education	0.0300	-0.0013	0.0708	1.0000	
Economic Freedom	-0.1106	-0.0603	0.0357	0.0331	1.0000

Source: Authors' own calculations.

Prior to testing for multicollinearity, corruption and life expectancy were also considered for inclusion as independent variables due to their influence on GDP. They were, however, found to strongly correlate with other variables: life expectancy versus education, and corruption versus economic freedom. To avoid interpretation issues due to multicollinearity, corruption and life expectancy were excluded from the model.

Table 4: Test for multicollinearity

Variables	Polity	Investments	Education	Economic Freedom
VIF	1.00	1.01	1.00	1.01
Mean			1.00	

Source: Stata 16, test-statistics for multicollinearity.

Note: None of the variables included in the model presents a VIF score higher than 5, indicating that there is no problem of multicollinearity in the model.

5.4.2. Autocorrelation

Autocorrelation, also referred to as serial correlation, is caused by standard errors in the model correlating over time, which leads to inaccurate standard error values. This is problematic since it increases the risk of incorrect significance levels. Further, autocorrelation could lead to inaccurate R-square estimates, making the model seem to have a higher explanatory power than it really does. A Wooldridge test was performed as presented in Table 5, with the result suggesting that no autocorrelation was present.

Table 5: Test for autocorrelation

Wooldridge test for autocorrelation	P-value
H_0 : No first order autocorrelation	0.9617

Source: Stata 16, test-statistics for autocorrelation.

Note: A p-value of 0.9617 indicates that the null hypothesis is not rejected, suggesting that there is no significant autocorrelation present in the model.

5.4.3. Heteroscedasticity

To control the data for heteroscedasticity, a non-constant variance across all included units, a Breusch-Pagan test was conducted. The results from the heteroscedasticity test presented in Table 6, suggest that the data is affected by heteroscedasticity. A White test was also performed, with the results supporting the data being affected by heteroscedasticity.

Table 6: Tests for heteroscedasticity

Breusch-Pagan	P-value
H_0 : Constant variance	0.0000
White test	P-value
H_0 : Homoscedasticity	0.0000

Source: Stata 16, test-statistics for heteroscedasticity.

Note: *The Breusch-Pagan test rejects the null hypothesis, indicating that the data is not subject to constant variance. The White test does also reject the null hypothesis of homoscedasticity, suggesting that the data is heteroscedastic.*

Heteroscedasticity, non-constant variance of the coefficients over time, signifies that the coefficients will not be efficient and suggests that the standard errors will be inefficient, meaning that the coefficients and standard errors would not be reliable. To minimize the effect of the heteroscedasticity, affecting the standard error estimations, robust standard errors are normally used². However, when robust standard errors are combined with panel data in Stata, the commands for robust and clustered standard errors produce the same results³. Using robust standard errors can potentially be problematic, as the results from the analysis may suggest a greater standard error and more frequent insignificant results. Clustered standard errors are usually used when autocorrelation and heteroscedasticity are coexisting, which is not the case for this thesis. Nonetheless, clustered standard errors can still handle the problems of heteroscedasticity without autocorrelation being present⁴. Therefore, in this thesis clustered standard errors will be used.

5.4.4. Stationarity

To be certain that the model does not include any non-stationary variables that could produce incorrect or unreliable results this would mean that conclusions drawn from the results would be limited to explanations of effects ceteris paribus. A Fisher test is conducted. According to

² Jeff Wooldridge (2016), on the Statalist.org forum, has commented that there is no difference between clustered or robust standard errors when using panel data. Also he mentions that clustered standard errors can be when heteroscedasticity is present in the data but autocorrelation is not.
<https://www.statalist.org/forums/forum/general-stata-discussion/general/1357946-panel-data-robust-standard-errors>

³ ibid

⁴ ibid

the results of the test, presented in Table 7, all the variables are stationary. Indicating that the model is stationary.

Table 7: Test for stationarity

Fisher					
Variables	GDP	Polity	Investments	Education	Economic Freedom
P-value	0.0000	0.0000	0.0000	0.0000	0.0000

H_0 : Panels contain unit roots

Source: Stata 16, test statistics for stationarity.

Note: The test rejects the null hypothesis, indicating that all of the variables and data are stationary.

6. Results

This section presents the results of the regression analysis.

First, a statistical regression analysis was performed with a model where the average change to the Polity score during the last five years was the only independent variable versus the dependent variable of growth of GDP per capita. The results are listed in Table 8. As can be seen in the table, the regression analysis found a statistically significant effect ($p = 0.004$) on growth of GDP per capita from the average change to the Polity score during the last five years. Taken together with the positive coefficient value (0.429), this result suggests an increase in growth of GDP per capita following an increase in Polity score.

Table 8: Panel data regression analysis with only Y_{PC} and Polity

Panel data regression analysis	GDP per capita	P-value
Polity	0.429** (0.145)	0.004
Constant	2.490*** (0.014)	0.000
N	3592	

Source: Stata 16, panel data regression analysis.

Note: Robust standard errors are given in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. In this analysis, 157 countries are used (rather than the 145 used in Table 9), see Appendix 1 and Appendix 2 for the full list of countries included in this regression.

Next, a statistical regression analysis was performed involving all of the selected independent variables, being average change to Polity score in the last 5 years, total investments, economic freedom, and yearly change to mean years of schooling, versus the dependent variable of growth of GDP per capita. The results are listed in Table 9. Note that countries that were excluded due to missing data in the final Model 4 were also excluded from Models 1 through 3 in Table 9, but were not yet excluded in Table 8. As can be seen in the table, the regression analysis found that the relationship between Polity score change and growth of GDP per capita is not statistically significant following the exclusion of more countries and inclusion of more variables in the model ($p = 0.078$). Among the other independent variables included in the model, total investment showed a statistically significant p value ($p = 0.000$),

the yearly change of the mean years of schooling displayed a not statistically significant p value ($p = 0.065$), and economic freedom exhibited a statistically significant p value ($p = 0.009$) with a negative, relatively small coefficient.

Table 9: Panel data regression analysis with all variables

GDP per capita	Model 1	Model 2	Model 3	Model 4
Polity	0.309 (1.96)	0.305 (1.84)	0.307 (1.85)	0.291 (1.78)
Investments		0.114*** (3.54)	0.114*** (3.54)	0.117*** (3.67)
Education			0.785 (1.95)	0.748 (1.86)
Economic Freedom				-0.0694** (-2.66)
Constant	2.484*** (213.36)	-0.254 (-0.33)	-0.329 (-0.43)	3.779* (2.03)
N	3150	3150	3150	3150
R^2	0.001	0.022	0.023	0.027

Source: Stata 16, panel data regression analysis.

Note: Robust standard errors are given in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. In this analysis, 145 countries are used (in comparison to the 157 in Table 8); see Appendix 1 for the full list of countries included in this regression. In Model 4 the p-value is as follows: Polity 0.078, Investments 0.000, Education 0.065, Economic Freedom 0.009.

6.1. Misspecification test

Although the models contain some statistically significant variables, which suggests that the results are not random, the R^2 values of the models are relatively low as can be seen in Table 9. In order to verify that the low R^2 values are not the result of a misspecified model, a misspecification test was conducted in Stata. According to the result of the misspecification test, listed in Table 10, the model is correctly specified.

Table 10: Test for misspecification

Misspecification test	P-value
H_0 : Model is correctly specified	0.0874

Source: Stata 16, test for misspecification.

Note: The result indicates no model misspecification, as the null hypothesis is not rejected.

7. Discussion

In this section the empirical findings in section 6 are discussed. First the effect of Polity on growth of GDP per capita is discussed, then the results of the full model as presented in Table 9. Next, some additional methodological limitations are considered. Finally, the results are considered relative to previous studies.

7.1. Empirical findings, major findings and implications

As can be seen in Table 8, a model using only the average change to Polity score during the last five years as an independent variable showed a statistically significant effect on the growth of GDP per capita as the dependent variable. In contrast, Table 9 shows that after more independent variables were included in the model, a direct relationship between Polity score change and growth of GDP per capita seems less likely. This suggests that a relationship between the form of government and growth of GDP per capita would instead be more indirect in nature, potentially being a product of policy choices that may be more common in democracies while not necessarily being restricted to them. This could be one potential explanation as to how an increased degree of democracy could achieve a greater growth of GDP per capita. However, that could also imply that governments might be able to potentially achieve similar GDP growth advantages without becoming more democratic, by merely behaving more like democracies as far as growth-supporting policy changes are concerned. It is also possible that much of a growth gain following democratization could be influenced by more external factors, such as the political changes leading to international reactions followed by changes in trade and foreign investments.

The fact that economic freedom produces a statistically significant p value ($p = 0.009$) while also featuring a negative coefficient is interesting, as it seemingly contradicts the expectation. This result may however be in line with the conclusions of a previous study, where the authors suggested that the level of economic freedom does not affect the “steady state growth” of a country, but rather affects how quickly it is achieved (de Haan & Sturm, 2000). Furthermore, it is also possible that this result could simply be a regression consequence of developing economies having a lower degree of economic freedom while simultaneously having a greater average growth of GDP, when compared to developed economies. In 2018, developing economies saw a GDP growth of nearly twice the size of the GDP growth in developed economies (United Nations Conference on Trade and Development, 2019).

7.2. Methodological limitations

In addition to the limitations already discussed in 4.2, which chiefly concerned limitations concerning the available data, the models used in this thesis also cause some limitations. Using a moving average of Polity score change, rather than the ordinary Polity score, imposes some limitations on what comparisons can be done vis-a-vis previous studies. Most previous studies on the potential relationship between Polity score and GDP growth have focused on comparing the GDP growth of countries to their current Polity scores, rather than examining how a change in Polity score correlates with changes in GDP growth rate. This means that while it is possible to relate the results of this study to the results of previous studies, the availability of potential direct comparisons is more limited.

It should also be noted that the findings of a previous study, by Barro (1994), suggests that the relationship between a change in form of government and gains in economic growth may depend on how democratic a country initially is, and that the relationship may be non-linear with decreasing gains from further democratization. The model used in this study, however, is linear and also does not include the starting Polity values as a variable, though it may be noted that the largest gains in Polity score are only mathematically possible from lower Polity scores. It is possible that a different model, taking these factors into account, might produce different results than the model used in this study.

7.3. Comparisons with previous studies

The potential implication that governments can achieve democracy-associated GDP growth advantages without becoming more democratic is, at least superficially, compatible with the “Lee thesis”, which goes even further by arguing that autocracies have an advantage over democracies due to a wider range of palatable policy options. While a study on the Lee thesis failed to find empirical support for dictatorships being better than democracies at producing economic growth, it did note that the autocracies in the study tended to have a greater total investment (though potentially less efficient) but also a lower enrollment in higher education (Knutsen, 2010). When also considering the regression results above, this raises the question whether a greater degree of enrollment in higher education is less than fully compatible with autocracy, or whether autocracies can potentially achieve a higher level of education in their population without simultaneously undermining their own authority. In the concluding remarks of a paper on higher education and authoritarian resilience, its author notes that

China is not the only authoritarian state aiming for its universities to “serve both as motors of economic development and as mainstays of authoritarian rule” and notes that Singapore “already boasts an outstanding higher education infrastructure that has clearly redounded to the island’s economic benefit while not unraveling its authoritarian political fabric” (Perry, 2015).

Similarly, it has previously been suggested by Barro (1994) that autocracies can avoid some problems common to autocracies, such as corruption, by adopting some aspects from democracies. This could, potentially, allow them to achieve greater economic growth than democracies. This hypothesis is not contradicted by the findings in this study, as the results suggest that the growth benefits associated with democratization are not necessarily intrinsic but can rather be a consequence of policies merely associated with democratization.

However, it should also be noted that calculations of correlations between countries’ form of government and GDP growth may be affected by growth-promoting policies in autocracies. Indeed, it has previously been suggested by Feng (1997) that economic growth promotes political stability for both democracies and autocracies, and Przeworski and Limongi (1997) argued that a strong economic performance may increase popular support for the government and thereby have a stabilizing effect on the state and its regime, regardless of whether it is democratic or autocratic. This would mean that autocratic forms of government are incentivized to pursue policies supporting economic growth, as a means of political survival. This would, in turn, suggest that the GDP growth results of autocracies are also influenced by growth-promoting policies that could potentially be used by democracies as well. If there is an inherent effect of democracy or autocracy on economic growth, it may be very difficult to disentangle from the contributions of growth-promoting policies that are more common to either side of the Polity spectrum.

In a study of democratizing countries during the time period 1960-2010, Hariri (2013) found that new democracies indeed tended to get increased economic growth. This was primarily attributed to a substantial influx of foreign aid in the 10 years following democratization. However, the results of Hariri’s study are not easily compared to the results of this study due to methodological differences. Hariri’s model was binary in the sense that democratization was described with a binary variable; a country had either become a new democracy, or it was not. It did not attempt to analyze the effects of differently sized changes in Polity score

among countries that started out as democratic or remained autocratic during the entire period studied. Hariri's study also covered the time period 1960-2010 while this study rather covered the time period 1995-2018, meaning that the only overlapping years are 1995-2010; Hariri's study covers a significant portion of the Cold War and the time of decolonization, while this study rather regards the post-Cold War era and the autocracies that still remain. Still, the different variables used in the studies could potentially suggest that the growth increase from post-democratization foreign aid could be due to the foreign aid being used in a manner that promoted economic growth, such as greater spending on education and investments. Hariri did note that investments seemed to increase post-democratization, though without statistical significance. It is possible that the increased economic growth may also have come after an increase in economic freedom, but that variable was not included in Hariri's study.

8. Summary and conclusions

In this section conclusions are described based on the major findings relative to the research question presented in the beginning of the thesis. Finally, potential further studies are considered.

In analyzing whether a change in form of government has an effect on economic growth, this thesis has found a statistically significant effect of the average change to Polity score during the last five years versus the growth of GDP per capita. However, if more independent variables are included in the model the relationship between form of government and economic growth becomes less clear. A relationship may be more indirect in nature, potentially being the product of policy choices that may be subject to preference bias from different forms of governments while not being inherently exclusive to any of them. Or, as some authors have previously concluded, “thinking in terms of regimes does not seem to capture the relevant differences” (Przeworski & Limongi, 1993).

Furthermore, this thesis has contributed to the existing literature by combining two aspects. Firstly, by using a regression model where the variable for the form of government could capture lagging effects of changes in form of government on economic growth (up to 5 years after the change), as well as effects on economic growth from different extents of change in form of government. The authors of this thesis are not aware of any previous study combining these features. Secondly, by focusing entirely on the time period following the Cold War and decolonization era. This time period has not yet been studied as extensively, and it can not be taken for granted that autocracies and democracies still compare in the same way they did before the end of the Cold War and the political, technological, economical and other developments that have occurred since then. To the best of the authors’ own knowledge and database searches, no similar combination of aspects has yet been published.

There are several potential areas for further research. Further studies could be done to further evaluate the relationship between the form of government and GDP growth, short-term as well as long-term. This could involve, but not necessarily be limited to, further examination of how different forms of government relate to and implement different policies of importance to economic growth; how differences in international cooperation and trade affect democracies and autocracies; more data covering additional years; the impact on countries

that become less democratic and more autocratic; applying a non-linear model, that takes into account the starting point of the form of government, to the post-Cold War period.

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10. Appendix

Appendix 1. List of countries included in the study

Countries			
Albania	Djibouti	Kuwait	Russian Federation
Algeria	Dominican Republic	Kyrgyz, Rep.	Rwanda
Angola	Ecuador	Latvia	Saudi Arabia
Argentina	Egypt, Arab Rep.	Lesotho	Senegal
Armenia	El Salvador	Libya	Serbia
Australia	Equatorial Guinea	Lithuania	Sierra Leone
Austria	Eritrea	Luxembourg	Singapore
Azerbaijan	Estonia	Madagascar	Slovak Republic
Bahrain	Eswatini	Malawi	Slovenia
Bangladesh	Ethiopia	Malaysia	Solomon Islands
Belarus	Fiji	Mali	South Africa
Belgium	Finland	Mauritania	Spain
Benin	France	Mauritius	Sri Lanka
Bhutan	Gabon	Mexico	Sweden
Bolivia	Georgia	Moldova	Switzerland
Botswana	Germany	Mongolia	Syrian Arab Republic
Brazil	Ghana	Montenegro	Tajikistan
Bulgaria	Greece	Morocco	Tanzania
Burkina Faso	Guatemala	Mozambique	Thailand
Burundi	Guinea	Myanmar	Timor-Leste
Cabo Verde	Guinea-Bissau	Namibia	Togo
Cambodia	Guyana	Nepal	Tunisia
Cameroon	Haiti	Netherlands	Turkey
Canada	Honduras	New Zealand	Uganda
Central African Republic	Hungary	Nicaragua	Ukraine
Chad	India	Niger	United Arab Emirates
Chile	Indonesia	Nigeria	United Kingdom
China	Iran, Islamic Rep.	Norway	United States

Colombia	Ireland	Oman	Uruguay
Comoros	Israel	Pakistan	Uzbekistan
Congo, Dem. Rep.	Italy	Panama	Venezuela, RB
Congo, Rep.	Jamaica	Paraguay	Vietnam
Costa Rica	Japan	Peru	Yemen, Rep.
Croatia	Jordan	Philippines	Zambia
Cyprus	Kazakhstan	Poland	
Czech Republic	Kenya	Portugal	
Denmark	Korea, Rep.	Romania	

Source: Various data sources included in this thesis, assembled to one dataset.

Note: There are 145 countries included in the study, this sample is from the countries included in Table 9. Also note that “Serbia” refers to the Federal Republic of Yugoslavia and “Serbia and Montenegro” prior to the secession of Montenegro in 2006.

Appendix 2. List of countries also included in Table 8.

Countries			
Iraq	North Macedonia	Somalia	Trinidad and Tobago
Lebanon	Papua New Guinea	Sudan	Turkmenistan
Liberia	Qatar	Suriname	Zimbabwe

Source: The GDP per capita data and Polity data.

Note: In the original study there are 145 countries, but when only investigating the relationship between GDP per capita and Polity (in the results section, Table 8) without any other independent variables, twelve additional countries are also included alongside the countries shown in Appendix 1.