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Does Political Experience and Educational Background of Politicians Matter?

- A study of the Swedish governments

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Abstract

This thesis investigates whether the level of education as well as political experience among the politicians in the Swedish government affect the Swedish GDP growth. We use a new and unique dataset that covers the politicians governing in the Swedish government between 1917 and 2014. Due to the model specification, potential endogeneity problems and data limitations it cannot be said with confidence that the results credibly accept nor refute the argument that the politicians' educational background and political experience matter for the Swedish GDP growth. Despite these shortcomings, the novelty of the dataset brings interesting facts about the Swedish governments during this time period. The right-wing governments have generally had higher education and more political experience than the left-wing governments. Throughout the dataset 60% of the politicians have at least a bachelor's degree, which means that the majority of the politicians have tertiary education. We also see a progressive increase in the politicians' years of political experience, indicating that the politicians emphasise on gaining more experience during this time period.

JEL: O10, A2, I25, I26
Keywords: Political leadership, Politicians' education, Politicians' experience, Economic development, Swedish Government

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1 Introduction

Previous economic literature shows that characteristics of individual decision makers have an impact on aggregated economic outcomes (Jones, Olken 2005, Mercier 2013, Besley, Montalvo & Reynal-Querol 2011, Dreher et al. 2009). From a global perspective Jones and Olken (2005) find that individual leaders have an essential effect on GDP growth and policy outcomes, by studying the individual with highest political power in multiple countries. Identifying a causal impact of political leaders on economic outcomes the authors opened the way for further investigation on the role of political leaders. Following this result, Besley, Montavalo and Reynal-Querol (2011) study how the political leader's characteristics, in terms of level of education, affect growth. They find a positive and significant impact of leaders' educational attainment on GDP growth. The main interpretation behind these results are that educated leaders are more knowledgeable than others and therefore better able to make more sound and rational economic policy decisions, which may lead to better economic outcomes. Similarly, experience is argued to have the same effect as education as people learn useful skills by practicing them (Robinson, Sexton 1994). Dreher et al. (2009) does not only show the importance of the educational background of leaders but also emphasize the importance of politicians' political experience, by finding evidence for a better political performance when political experience is higher. The power of a politician is likely to depend on their political experience since the amount of years spent in politics help them develop skills that are well-adapted for environments of negotiations. Furthermore, it is argued that the implementation of political reforms may be inadequate due to insufficient understanding among the politicians, specifying that both educational background and political experience could be an advantage when making political decisions and separating good from bad advice. However, the views on the relative importance of educational background compared to political experience are diverse.

In the Swedish context the media have covered a debate about the Swedish politicians and their different backgrounds. The population wants the government to reflect the society, yet, the politicians are also expected to be experts within their area and to have a substantial background in politics (Sjöholm 2012). In addition, some argue that the educational level among the politicians is less important than political experience in Sweden (Thorén 2009). A statement that coincide with the very fact that a majority of the politicians in the most recent Swedish governments focus on gathering political experience, rather than studying, after finishing the compulsory education. Moreover, some claim that, in times of crisis, a minister with substantial political experience will make better political decisions than a person with less political experience but a higher educational attainment, meaning that politicians with more political experience have more relevant knowledge to manage a crisis. However, countries such as Greece and Italy have used the opposite strategy by appointing technocratic governments after the politicians failed to govern the country successfully, yet, there is not much evidence indicating this to be a successful approach in neither Italy nor Greece. Regarding politicians' educational background a previous Swedish minister stresses that a politician's performance will always be questioned when one lacks an educational degree, i.e. that there is a need to perform better compared to a minister with a higher educational attainment (Sjöholm 2012). The educational attainment and political experience among the Swedish politicians vary quite substantially, indicating that there are several ways to go to obtain a seat in the Swedish government (Thorén 2009), for example, the labour movement is an alternative way to political office in Sweden (Persson 2012).

Despite previous studies showing that leader characteristics matter for a country's economic development, the effect in democracies has been smaller. Jones and Olken (2005) argue that this can be due to the different constraints placed on leaders in democracies and autocracies. Political

leaders are not the only ones making decisions in democratic countries (McCormick 2012) and the importance of social interactions in determining individual behaviour, so-called peer effects, should not be omitted (Sacerdote 2000). Therefore, only looking at one political leader in a democracy might not show the importance of education and political experience for the economic development. With the basis of Jones and Olken (2005) finding a weaker result for democratic countries this thesis proposes a different perspective of the subject, not only focusing on individual characteristics of political leaders, but also focusing on the characteristics of a group of politicians working close to the leader in a democracy. More specifically we will study the educational background and political experience of the politicians. Restricted by time and the scope of this thesis we perform our study in one country, that is, Sweden. In Sweden the politicians working close to the government's leader are the ministers and together with the Prime Minister they form the government of Sweden. First, we question whether education and political experience of the larger group of politicians impact Sweden's growth rate, which to our knowledge has not been tested to this date. Secondly we will focus on the importance of the educational background of the politicians versus their political experience. Lastly we compare the average educational attainment and average political experience among the politicians in the government to the individual ministers.

The first contribution of this thesis is to build a new and unique dataset of the personal characteristics on all the Swedish politicians that have governed in the government from 1917 to 2014. Information of the politicians' educational background, overall political experience, age, gender and party affiliation has been gathered, which to our knowledge is not compiled in any existing database for this time period. The current literature focuses on individual leaders and does not provide a quantitative analysis of the characteristics of a group of politicians in democracies and hence our second contribution is to fill this gap.

1.1 Research questions

As noted earlier, this thesis investigates if the leader together with the politicians that work closely with the leader affect the economic development of a democratic country and in particular if they affect the economic development of Sweden. We will investigate if their educational background and political experience affect the GDP growth of Sweden. This leads us to the following research questions.

1. Does the educational background and overall political experience of the politicians have a positive impact on GDP growth?
2. Is the magnitude of the effect different between the educational background and overall political experience of the politicians?
3. Does the average educational background and average political experience of the group of politicians in the government matter more in Sweden than the educational background and overall political experience of the highest leaders?

By asking the first question, the thesis limits itself to only look at GDP growth as a measure of economic development. The first and second questions are based on previous findings, whereas the third question has not to our knowledge been tested before in empirical economics. Furthermore, we will only investigate the influence of the educational level of the politicians rather than the specific type of education. Additionally, by concentrating on the politicians' political experience we exclude other kind of experience that comes from another context.

1.2 Purpose: Why care about the politician's background?

Individual leaders have played an important role in political, cultural, and economical development in ancient history as well as recent history. This is particularly the case for certain important political

figures such as Indira Ghandi, Aung San Suu Kyi, and Winston Churchill. As observed in the macroeconomic literature, individual decision makers have an impact on aggregated economic outcomes. Bertrand and Scholar (2003) build a panel dataset following the careers of individual managers over time. They show that manager fixed-effects matter for a broad-range of firm decisions and firm performances. The educational background of the individual managers partly explains the differences in manager fixed-effects. Additional papers show that the career background of central bankers affects policy outcomes such as interest rate and inflation rate (Adolph 2013). On a firm and central bank level the characteristics of decision makers impact aggregated outcomes, and hence on a country level the characteristics of political leaders may affect the aggregated outcomes (Mercier 2013). This postulation is the basis for our thesis, which has already been investigated by previous economic literature (Jones, Olken 2005, Mercier 2013, Besley, Montalvo & Reynal-Querol 2011). In modern democratic country leaders are constrained in their action by different laws and regulations, but also since they do not have the ultimate power. Some politicians may have more power than others (Jones, Olken 2005, Warwick, Druckman 2005), however the point is that the decision making is not only made by one individual leader in a democracy and hence we will study a group of politicians that matter the most rather than an individual leader.

The belief that both education and political experience is important for economic outcomes is well established in the current literature (Besley, Montalvo & Reynal-Querol 2011, Dreher et al. 2009, Kotsogiannis, Schwager 2006). The reason for why the educational background and political experience matter is rather straightforward. Politicians gain knowledge through education and political experience and this knowledge and experience is important for when forming policies and deciding on political reforms (Dreher et al. 2009). The question is if the magnitude of the effect of the politicians' backgrounds is large enough to yield a noteworthy impact on the growth rate of a democratic country such as Sweden?

The wider purpose of this thesis is to contribute to the knowledge about how politicians' educational background and overall political experience impacts the economic development of a democratic country. More specifically, our purpose is to study if the educational background and overall political experience of the Swedish government affect Sweden's GDP growth. In addition, the purpose is also to contribute with a new and extensive dataset covering the backgrounds of politicians that have had seats in the Swedish government between 1917 and 2014. This adds to two existing datasets covering the backgrounds of all the Swedish municipal politicians during the election periods between 1991 and 2006 (Rickne, Folke 2012) and 1998 and 2010 (Folke, Persson & Rickne 2014) respectively.

Sweden was chosen as a country to study because of various reasons. Sweden has had a democracy for a long period of time and decisions are made collectively in the government. The democratic system is constructed in a way that the political leaders that work more closely with the Prime Minister form a government and hence they can clearly be distinguished from the other politicians in the parliament (Regeringskansliet 2013b). Since we are studying the politicians that work closely with the Prime Minister, this distinction has to be apparent.

Sweden is also a country where there is a high share of variation between the politicians with respect to socioeconomic background comparing to other countries. The inequality is lower, while at the same time there is a higher degree of social mobility in Sweden when comparing to other countries such as the US. The Swedish education system is designed in a way that the ambition is to increase the social mobility. Education is free in Sweden and thus the individuals who study do not need to have a certain socioeconomic background, leading to much higher variation between individuals who study comparing to other countries where education can be very costly. Additionally, comparing to other countries higher education and higher experience is not the only way of obtaining a seat in the Swedish government and thus there may be a higher variation

between the educational background and political experience among the politicians in Sweden (Persson 2012).

The current discussion regarding Swedish politicians having lower educational attainment than other countries such as the US also makes Sweden a relevant country to study (Wallberg 2008). If educational attainment among the politicians affects growth, one could question the relatively low educational attainment among the Swedish politicians. Moreover, Sweden was chosen given the availability of the information on politicians' educational background and political experience.

The remainder part of this study is structured as follows. Next section summarizes the related literature regarding the return to education and the return to experience both in a political setting and other various settings. Section 3 will present a background over the Swedish political system and section 4 covers the hypothesis of this thesis. Method, statistical model and an introduction to data will be presented in section 5 followed by the results from the statistical analysis in section 6. Finally section 7 and 8 will present discussion and conclusion.

2 Previous research

2.1 Economic returns to education

Ever since the early 1960's the estimation of economic return to education has been a dominating area of research in applied economics (Harmon 2011, Card 1999, Ashenfelter, Harmon & Oosterbeek 1999, Acemoglu, Angrist 2001). Becker's study *"Investment in human capital: a theoretical analysis"* (1962) is one of the earlier studies within this field. The author created the concept of seeing investment in education as a capital investment and analyses the effects of investment in human capital on economic outcomes. Human capital is especially important in today's knowledge-driven economy and on a micro-level there is clear evidence suggesting that educational attainment is determinant for individuals' income (De la Fuente, Ciccone 2003). This positive relation has been found by many different scholars (De la Fuente, Ciccone 2003, Krueger, Ashenfelter 1992, Harmon, Walker 2001). Although there is clear evidence of the positive relation between education and income, the results vary significantly depending on the estimation methods, the dataset being used and the assumption being made by the authors (Harmon 2011).

The macroeconomic literature examines whether the aggregated level of education in a cross-section of countries is related to the countries' GDP growth rate (Krueger, Lindahl 1999). The macroeconomic growth theory is constructed on the idea that human capital is vital for economic growth. However there is no consensus in the academic literature on the causality of human capital investments to economic growth (Topel 1999). A positive relation has been found by various scholars (Krueger, Lindahl 1999, Barro 2001, Mankiw, Romer & Weil 1990), yet the magnitudes differ depending on various econometric methods (De la Fuente, Ciccone 2003). Krueger and Lindahl (1999) examine the effect of education on growth in Sweden compared to the world. They show that an additional year of schooling increases earnings by approximately 5-15 percent, where Sweden belongs to the lower end of the distribution whereas the US belongs to the higher. The authors further conclude that change in educational level is positively correlated with GDP growth.

Furthermore, it is reasonable that different levels of education have different impact on growth (Ljungberg, Nilsson 2009, Vandenbussche, Aghion & Meghir 2006). Vandenbussche, Aghion and Meghir (2006) argue that tertiary education influence economic growth when a country attains a certain technological level and can independently generate innovations. In countries that cannot generate the innovations on their own, lower levels of education are more important. This could be a reason to why the return to education is diverse in different countries. Barro (2001) studies the effect of educational level and quality on GDP growth in approximately 100 countries.

The author finds that the secondary and higher educational levels among males do have a positive effect on economic growth. However, he finds that the same educational levels between females have an insignificant effect on growth and suggests that some countries do not utilize highly educated women well enough in the labour markets.

Although a positive relation has been found between education and economic outcomes both at a micro and macro level, there are studies that have found the opposite (Kyriacou 1991). However, it has been argued that these negative findings were due to poor data and econometric problems and the more recent studies show that education has an important impact on growth (De la Fuente, Ciccone 2003, Lindahl, Krueger 2001, Cohen, Soto 2007).

2.2 Economic returns to experience

As presented earlier, educational attainment is important for both individual earnings and economic growth, however, labour market experience has also been shown to be an important variable in this setting (Robinson, Sexton 1994, Olivetti 2006, Munasinghe, Reif & Henriques 2008). Robinson and Sexton (1994) investigate educational attainment and job market experience and their relation to earnings. The authors argue that experience is a variable with a close tie to education, defined in their study as the number of years after a completed education an individual has been able to work. They find that experience and education have a similar positive relation to earnings, yet, the effect of experience is weaker.

Previous literature shows that there is a difference between men and women's return to labour market experience (Olivetti 2006, Munasinghe, Reif & Henriques 2008). Munasinghe, Reif and Henriques (2008) study the gender gap in wage returns to an extra year of job tenure and experience from the labour market. The tenure variable represents the length of time that a person has spent on his or her current job and experience represents the persons' total labour market experience. Comparing men and women they find that the return to wage of an additional year of labour market experience and tenure is higher for men.

There are several additional papers that study the return to labour market experience and job tenure and how these factors affect earnings (Abraham, Farber 1986, Williams 1991, Altonji, Williams 1992, Altonji, Williams 2005). Abraham and Farber (1986) show for example that the return to labour market experience is significant when comparing different businesses, and regarding tenure the return is smaller than suggested by other studies.

2.3 Politicians' importance for economic development

In recent economic literature political leaders have been shown to be important for economic development of countries (Jones, Olken 2005, Mercier 2013, Besley, Montalvo & Reynal-Querol 2011). Although the idea of leaders being an important factor for determining economic outcomes is nothing new, the focus in most previous growth literature has mainly been on deterministic country characteristics and other policy variables.[1] Jones and Olken (2005) were one of the first authors that tried to study the importance of leaders in a quantitative setting. The authors conduct a study using a dataset covering leaders from 130 countries over the time period 1945 to 2004. They study how leader characteristics such as leaders' tenure, age and type of regime affect economic growth and policy outcomes. They find that leaders have a strong causal effect on national economic growth and policy outcomes, especially monetary policy. From these results, the authors argue that leaders may play an essential role for a country's economic growth. Inspired by Jones and Olken (2005), Besley, Montavalo and Reynal-Querol (2011) took the theory one step further by investigating how political leaders' education affect growth. The paper examines the highest

[1] See, for example, Ram (1986) on government size, La Porta et al. (1999) on legal origin and Acemoglu and Angrist (2001) on political institution.

political leader in 197 countries to find out how the level of education among the leaders affects economic growth during the leader's tenure. They provide evidence for a positive and significant impact of leaders' educational attainment on growth. The authors argue that one way of interpreting these results is that a leader with higher education is more competent and qualified to make better economic policy decisions, which lead to better economic outcomes. Other leaders might promote the provision of infrastructure and public goods, which in return also generates better economic outcomes. No matter which focus a leader has, the authors' point is that more highly educated leaders are also better citizens that are more likely operate for the wider public interest (Besley, Montalvo & Reynal-Querol 2011).

As mentioned earlier, despite the fact that previous studies have shown that leaders play an important role for a country's economic development the effect for democracies has shown to be weaker. Leaders in democracies are often more restrained than leaders in autocracies and hence the effect for autocratic countries is more noticeable (Jones, Olken 2005). Moreover, in democratic countries the leader is not the only one making decisions (McCormick 2012). Another angle of this subject that has been given light in previous literature is the relation between politicians' peer groups and policies. Washington (2006) investigates the peer effects by studying if daughters matter for the likelihood that their legislator fathers would vote for women's issues. The results show that an additional daughter in the family increases the probability that the father vote liberally on women's issues.

Another characteristic affecting policy outcomes is the gender of the leader; Chattopadhyay and Duflo (2001) show that women in Indian Village Councils invest more in infrastructure that is directly relevant to needs of rural women, whereas men in the Village Councils invest in education. The authors are controlling for endogeneity problems, however, they stress it should not be neglected that the results may be attributed to other characteristics of the observed individuals. Additionally, research show that leaders from developing countries who have studied abroad have a positive effect on the democratic level of the country. More interestingly they show that the effect is independent from the leader's education level as well as profession, however, this is mainly seen in countries with a poor initial level of democracy (Mercier 2013). Moreover, in many African countries it is known that a person belonging to the same ethnic group as the president is less likely to be treated unfairly by the government. Franck et al. (2012) show this by studying ethnicity of the leaders in 18 African countries, in which they found that ethnic favouritism is quite large and widespread. They provide evidence for ethnicity-based explanations of Africa's underdevelopment.

Furthermore, by increasing trade, attracting foreign direct investment, reducing prices and improving productivity, market-liberalizing reforms boost economic growth (Dreher et al. 2009, Megginson, Netter 2001, Wacziarg, Welch 2008). Elected politicians set new policies and reform strategies in modern democratic economies. It is argued that the politicians' education and professional experience are likely to be important when deciding on such policies and reform strategies (Dreher et al. 2009, Kotsogiannis, Schwager 2006). Developing and implementing new policies is very demanding and it requires knowledgeable people and thus it is argued that education and experience are important features for the politicians that set the policies (Kotsogiannis, Schwager 2006). Dreher et al. (2009) study governments in 72 countries and how their respective professional and educational background affect the implementation of market liberalizing reforms. They show that the term of office matter specifically for economists in the government. That is, the longer tenure for an economist the larger is the likelihood for reforms, suggesting that economists need some time to get well settled before managing a successful political support for policy reforms. Additionally they showed that the entrepreneurs belonging to the left-wing party have a stronger effect on the implementation of reforms compared to an entrepreneur belonging to the right-wing party. Thus, their overall results showed that both professional and educational background are affecting the implementation of liberalizing reforms, which are associated with growth.

2.4 Different measures for economic return to education and experience

By now, we should be able to conclude that education is regarded as an important factor for economic growth, yet there is no generally accepted view on the mechanism of this relationship. Although many people agree regarding the positive relation, the causality is less clear, meaning that whether education causes growth or if it is the other way around is less agreed upon (Ljungberg, Nilsson 2009). Despite the many different studies measuring this, scholars have been careful with the interpretation of the results. Moreover, the relationship between political leaders and education does not need to be causal. This is related to "ability bias", meaning that more able people seek for more higher education than less able people and in this way signal their ability (Card 1999).

There is also a bias when measuring the return to experience, Abraham and Farber (1986) are questioning earlier studies' use of cross-sectional data when assessing the conventional fact that workers with longer job tenure or workers with a higher total labour market experience have higher earnings. The authors argue that the positive cross-sectional relation between tenure, experience and earnings does not necessarily need to be causal. The positive relation between tenure and earnings may be because of an omitted variable bias, which corresponds to the quality of the worker, job or worker-employer match. This means that the workers that have a longer tenure have found a good employer match that increases their productivity that leads to higher earnings rather than experience related growth in productivity and earnings. Similarly to the reasoning of tenure, they argue that people with more experience have had more time to find a good job and/or good match of job and hence have higher earnings. To mitigate this bias, Abraham and Farber (1991) use a panel data sample in which they introduce a *completed job duration* variable of every job. This variable is included as a control in a standard earnings function. Adding the job duration control did not affect the return to experience, for technical and managerial employees. However, for blue-collar employees the variable created a decrease in the return to job market experience.

A pioneering method for measuring return to schooling and the impact of work experience is the Mincerian human capital earnings function from 1974 (Mincer 1974). The famous Mincer equation involves the fitting of semi-log ordinary least squares regression (OLS) using natural logarithm of earnings as dependent variable and years of education, labour market experience and its square as independent variables (Psacharopoulos 1994). The Mincer equation measures the return to education either on a micro-level or a macro-level, however it is not designed to estimate the contribution of education at the micro level on aggregated GDP growth.

There are authors who have studied micro variables on macro variables in a different manner. As mentioned earlier Jones and Olken (2005) study if national leaders' transitions have a causal effect on growth. Examining how national leadership transitions impact growth can be challenging since change of leadership are most likely not random. The drivers for economic growth may be determined by other underlying economic factors, e.g. the probability that a leader that gets re-elected has shown to be higher during economic booms and therefore growth can be particularly important for determining the winning leader (Fair 1978). To solve this endogeneity problem the authors study leaders that have left office during their tenure because of death or illness. The timing of these leader transitions is argued to be exogenous since the variation in leadership is unrelated to underlying economic conditions. The authors use a standard Wald test and a nonparametric Rank test of country fixed-effects to determine if the leader matters for countries GDP growth. Following Jones and Olken (2005), Besley, Montavalo and Reynal-Querol (2011) use the same method for assessing if leaders' education affects growth. Additionally they use a standard F-test of leader fixed-effects, by having dummies for each value of leaders to see if there are differences in growth related to different leaders. The authors use a discrete dummy variable taking on eight values, where eight is the highest educational attainment and one is illiterate.

Alongside with the literature studying the impact of leaders, Dreher et al. (2009) uses data covering the years 1970-2002 from 64 countries measuring the impact of the leaders' educational

background and experience on market liberalization reforms. The authors investigate the effect in three different ways: pooled OLS, the within-groups (country fixed-effects) estimator and the fixed-effects estimator including the lagged dependent variable.

We build on the recent promising literature about individual political leaders and their characteristics having an impact on aggregated economic outcomes. Thanks to the existing literature covering the backgrounds of the politicians in Sweden we have been able to collect a new and unique dataset. Since individual leaders have shown to have a smaller effect in democracies this justifies studying the educational background and overall political experience of a group of politicians in a democratic country.

3 The Swedish political system

The political system in Sweden is based on a parliamentary system where the government governs the country as long as it has the support from the parliament. The government proposes new laws or amendment of laws collectively (Sveriges Riksdag 2012). The parliament represents the Swedish population and decides whether a law should be introduced or changed, but it is the government that suggest most of the proposals, however, members of the parliament also have the power to suggest new laws (Regeringskansliet n.d.). Although the government is considered to be the engine for the change of laws and regulations that affects the development of Sweden, Sweden has to some extent a decentralised democracy where the municipalities and the county councils have a high degree of responsibility for various political decisions in society (Regeringskansliet 2013a).

Currently there are eight political parties that have had seats in the parliament. Historically, seven of the parties have had seats in the government. These parties include; the Social Democratic Party (Socialdemokraterna), the Moderate Party (Moderaterna), Liberal People's Party (Folkpartiet), the Left Party (Vänsterpartiet), Christian Democrats Party (Kristdemokraterna), the Centre Party (Centerpartiet), and the Green Party (Miljöpartiet).

After an election to parliament the Speaker of the Parliament proposes a new Prime Minister and which parties to be included in the government. The parliament takes a vote on the proposal, if more than 50 percent of the members (175) vote against, the proposal is rejected and a new proposal has to be made. Historically the parliament has never rejected a proposal by the Speaker of the Parliament. The chosen Prime Minister will in turn choose the government ministers and also has the authority to replace and transfer ministers as well as increase and decrease the number of ministers in the government without the support from the parliament (Sveriges Riksdag 2012). The number of total ministers in the government has varied throughout the history where the common number for the latter years lies between 20-25.

The distribution of the ministerial portfolios represent a significant step in the government process and in coalition governments the ministerial portfolios constitute one of the most valuable goods which parties negotiate. The distribution often depends on the number of parliamentary seats a party contributes to the parliament. Previous analyses of the distribution of the ministerial portfolios have relied on a strong assumption that all the ministerial posts are equally important in terms of general influence on various political decisions, e.g. that the Minister of Culture and the Prime Minister are equally important. In contrast to this, a study by Warwick and Druckman (2005), find that the Prime Minister in most cases is twice as important than the average ministerial portfolios. In most of the 14 countries that were included in the study, the Minister of Foreign Affairs and the Minister of Finance show to have a greater importance. The study is based on a survey asking experts in different countries to indicate the general importance of the various ministerial portfolios in their respective countries. Arranged in a declining order these are the most important portfolios in a Swedish context: the Prime Minister, Minister of Finance, Minister of

Foreign Affairs, Minister of Employment and Minister of Social Affairs (Warwick, Druckman 2005).

This type of analysis does not take into account that political parties can evaluate the same ministerial posts differently, we can expect that some political parties prefer certain ministerial portfolios based on their core subjects. A study by Budge and Keman (1991) show that certain types of parties (conservative, liberal, religious, agricultural and socialist parties) have specific type of ministerial portfolios that fit their ideological profile. For example, the parties that identify themselves with agricultural parties should prefer the Minister of Agriculture portfolio. This type of reasoning is to some extent also applicable to the Swedish government. In Table 1, the distribution of some of the selected ministerial portfolios in the Swedish coalition governments in the post-war period is presented. In all the cases where The Liberal People's Party (FP) entered the government, except for the last, they have received the Minister of Finance portfolio, which is in line with the prediction that the liberal parties prefer this type of ministerial portfolio.

Table 1: Distribution of selected ministerial portfolios

Government	Finance	Foreign Affairs	Defence	Justice	Agriculture	Social
Erlander I 1946-1951	S	S	S	S	C	S
Erlander II 1951-1957	S	S	S	S	C	S
Erlander III 1957-1969	S	S	S	S	C	S
Fälldin I 1976-1978	FP	C	M	Apol.	C	C
Fälldin II 1979-1081	FP	FP	M	M	C	C
Fälldin III 1981-1982	FP	FP	C	Apol.	C	C
Bildt 1991-1994	FP	M	M	M	C	C
Reinfeldt 2006-2014	M	M	M	M	C	KD

Note: Apol. is an abbreviation for apolitical
Source: Om makt och politik (2014)

In most cases when the Moderate Party (M), which has a more conservative ideology, has been part of the government, the Minister of Defence portfolio have been obtained by them, which supports the hypothesis that the conservative party prefer this portfolio. According to Budge and Keman (1991), the conservative should also obtain the Minister of Foreign Affairs portfolio, however the results are less clear in the Swedish government, where the portfolio have been obtained by the Liberal People's Party (FP), the Centre Party (C) and the Moderate Party (M). There is stronger support for the hypothesis with respect to the agricultural parties, in which the Centre Party (C) should obtain the portfolio of Minister of Agriculture, which they did in all Swedish coalition governments. Additionally, for the socialist parties they should obtain the portfolio of Minister of Social Affairs. In the case of Sweden the Social Democrats have obtained this ministerial portfolio in the few coalition governments that they have been included in. It seems to be the case that different parties put different weights on ministerial portfolios depending on which core ideology they have in Sweden.

Furthermore, the government proposes directions regarding the economic and budgetary policies in Sweden two times a year and the parliament decides whether or not to approve the propositions. The proposals contain suggestions of the state income and expenditures during the current or coming year (Regeringskansliet n.d.). The directions in the propositions are usually gradually implemented within the coming year after the presentation of the proposal has been made.

The government makes projections of the monetary consequences for the same year as the implementation as well as for the three next coming years (Regeringens proposition 2014).

Moreover, as mentioned in the previous literature, there is a tendency that voters respond to economic conditions (Fair 1978, Paldam, Schneider 1980, Auberger, Dubois 2005). These literature are based on the *responsibility hypothesis*, which means that a decline in the economy will lower the popularity of the ruling government, which are held responsible for the worsen economy. In Sweden, empirical research show that GDP growth does not have any effect on government support, however the opposite holds for the unemployment rate. Elinder (2010) finds that a reduction in regional unemployment by one percentage point is associated with an increase in support of the ruling government by 1,7 percentage points.

4 Hypotheses

Previous studies provide evidence that leader characteristics matter for the economic development of countries (Jones, Olken 2005, Mercier 2013, Besley, Montalvo & Reynal-Querol 2011, Dreher et al. 2009), yet, the effect is weaker in democracies (Jones & Olken 2005, Besley, Montalvo & Reynal-Querol 2011). Therefore, we want to investigate if this effect has prevailed in a mature democracy such as Sweden.

Education is central for determining economic outcomes; studies show that educational background has an impact on economic outcomes both at the individual level and country level (De la Fuente, Ciccone 2003, Mankiw, Romer & Weil 1990, 2001). These findings additionally apply on the political level and previous literature shows that educational background of politicians is positively related to a country's GDP growth (Besley, Montalvo & Reynal-Querol 2011). Likewise, Dreher et al. (2009) reveal that the politician's experience indeed have an impact on economic outcomes, and scholars within other research areas find evidence for a positive impact of experience on economic outcomes (Robinson, Sexton 1994, Olivetti 2006, Munasinghe, Reif & Henriques 2008), yet, overall experience is shown to yield a weaker effect than education (Robinson, Sexton 1994). However, the discussion in Swedish media emphasise that overall political experience is more important than education in Sweden (Sjöholm 2012, Thorén 2009). Nevertheless, there are no empirical findings strengthening this debate and thus we develop our hypothesis relying on previous studies rather than the discussion in media. This leads to the first and second hypothesis.

Hypothesis 1: The educational background and political experience of the politicians has a positive effect on the economic development.

Hypothesis 2: The magnitude of the effect of economic development is higher for education than experience and tenure.

The final hypothesis is derived from the theory that the effect of individual political leader's characteristics on growth is weaker in democratic countries (Jones, Olken 2005, Besley, Montalvo & Reynal-Querol 2011). It is argued that the weaker effect originates from that political leaders in democratic countries are more likely to be constrained by different regulations. In addition, political leaders in democratic countries do not have the absolute power since they are not the only ones making the decisions (McCormick 2012), which justify the third hypothesis.

Hypothesis 3: The educational background and overall political experience of the whole government matter more than the educational background and overall political experience of the highest ministerial portfolios in Sweden.

5 Data and Method

Data

5.1 Data collection

In order to address our research questions a dataset that covers all the politicians' educational background and overall political experience that has governed in the Swedish government between 1917 and 2014 was constructed. The dataset that our empirical analysis is based on contains all the politicians that have governed for more than six months. To our knowledge no such dataset exist and thus we needed to collect the data ourselves. The reason for the six months limit is that we believe that the politicians that are part of the government less than six months are less likely to have a substantial impact on political decisions that may affect growth.

In Sweden the final parliamentary break through is considered to be at 1917.[2] Thus we choose to gather data covering 1917 to 2014. The dataset covering the Swedish politicians was mainly collected through literature provided by the Swedish Riksdag library.[3] When politicians were not found in the literature, the data was collected through websites such as *Nationalencyklopedin* and *Svenskt Biografiskt Lexikon*. However since nearly all politicians that have governed in the Swedish government have had seats in the Swedish Riksdag at some point, there were not many politicians that could not be found in the literature. There are only two politicians for which the information regarding their educational background and overall political experience that were not found. The collected dataset contains information concerning not only the politicians' educational background, but also their political experience before entering the government, their tenure for which they were part of the government, which political party they belonged to, their gender and finally their age when entering the government.

The data collection has required an extensive research in various literature to be able to find accurate information. This has been both time consuming and required a comprehensive carefulness in order to make sure that the right input is registered. The data has been checked three times to decrease the risk of errors being present.

5.2 Classification of education

Following Besley, Montavalo and Reynal-Querol (2011) we created an adapted version of the measurement of educational attainment using a discrete variable. The variable ranges between one to six, where six is the highest educational attainment and one is the lowest. The ranking of educational attainment is defined as follows; the bottom category is specified as primary school, the next classification is high school, category three is special training beyond high school such as military school, art or music school, four is if the individual has taken courses at university level but not obtained a specific degree, five is education on a bachelor or masters level, and finally six is PhD, reader or licentiate. One should keep in mind that education changes over time in the sense that a law degree in the early 1920's does not have the same length or content as a law degree in the 1990's. One could argue that perhaps a better way of measuring education would have been to measure the number of years that each individual has studied in order to compare the education through time, however then only the overall rate of return to the typical year of schooling is reported. We believe that it is better to define education by level of education since we can then

[2] This is the official date when the Swedish King lost all his power over the government. The liberal Nils Edén broke the power of the king and formed a government with the support from a majority in the Parliament's second chamber (Nilsson 2006).

[3] Tvåkammarriksdagen 1867-1970, på Riksdagens uppdrag utarbetad av Anders Norberg, Andreas Tjerneld och Björn Asker, Band 1-5, Enkammarriksdagen 1971-1993, på Riksdagens uppdrag utarbetad av Anders Norberg, Andreas Tjerneld och Björn Asker, Band 1-2, Fakta om Folkomvalda 1985-2014, Sveriges regeringar 1840-2004, Ulf Larsson.

assess the effect for each level rather than year. Additionally, the data covering the years of education among the politicians was not found in the current literature.

5.3 Classification of experience

In the existing literature there is usually a distinction between tenure and labour market experience (Robinson, Sexton 1994), which with regards to politicians may be equivalent to their tenure in the government and how long they have been politically active. In this study, the overall political experience of the politicians is measured in three different ways. The first way is the summation of years in which the individual has been politically active before entering the government. The second way is measured from the first year the individual has been politically active until the first time they enter the government. The difference is that the first way does not take into account the years, if any, in which the individual has worked for a commercial company. As a sensitivity analysis, both ways will be tested to be able to see if there will be any substantial difference. Additionally we have separated the years where the politicians have governed in the government and thus a third way of measuring experience is their tenure. All in all we have one variable for *tenure*, which is experience from being part of the government, and the two variables that cover *political activity* before the politicians entered the government. When referring to both tenure and political activity we will use the term overall political experience.

5.4 Classification of additional controls

As previously mentioned additional controls of the politicians' characteristics have been collected. Prior literature has found differences in the return to experience and education depending on gender (Barro 2001, Olivetti 2006, Munasinghe, Reif & Henriques 2008). In addition the gender of the leader have shown to impact policy outcomes (Chattopadhyay, Duflo 2001), thus a dummy variable for gender is included as a control, where 1 is equal to male and 0 is equal to female. Following Jones & Olken (2005) we also include the politicians' age, which in our data is specified as the age of the politicians when entering the government. Moreover previous literature has found that certain type of parties prefer a specific type of ministerial portfolio that fit the ideological profile (Budge, Keman 1991). Similarly to Dreher et al. (2009) we control for whether political learning of the politicians influences the results by including party affiliation in the model, where 1 means that the politician belongs to the Social Democratic party and 0 means that the politician belongs to one of the right-wing parties.

5.5 Introduction to data and descriptives

The dataset contains 28 different governments and 327 different politicians in total. The data is collected on a yearly basis, since GDP growth rates are on a yearly basis, and thus this amounts to 1692 data points.[4] Each year, there are different numbers of ministerial portfolios and the type of portfolio also varies depending on government, thus this yields an unbalanced panel dataset. The data is aggregated into a time-series dataset, which yields less econometric problems when analysing the data.[5] Furthermore since one of the main purposes with this thesis is to study the effect of the average level of education and overall political experience of a government as whole, it is more reasonable to aggregate the data. The data is collapsed into one average value per variable and year, thus, this amounts to 98 data points. Due to the collapsed nature of the dataset, the interpretations of the variables are described in the table below.

[4] We use real GDP growth from the Swedish Central Bank.

[5] With an unbalanced panel dataset, many econometric problems such as heterogeneity of variance across variables occur, which creates problems for valid standard error estimates. In order to balance the dataset a large amount of data points need to be dropped, which would decrease the amount of observations substantially.

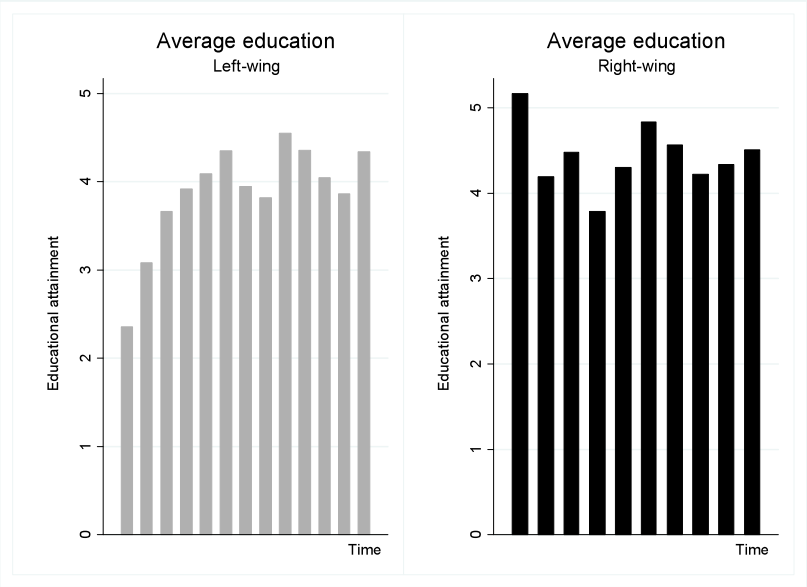
Table 2: Description of variables

Dependent Variable	
GDP growth rate	Swedish GDP growth rate per year in decimal points
Independent Variables	
Education Rank	Average level of education in the government per year
Political Activity	Average number of political activity in years, when political activity is defined as the summation of number of years where the politicians has been politically active
Political Activity 2	Average number of years of political activity in years when political activity is defined as the first year the individual has been politically active until the first time they enter the government. This variable is only used as a sensitivity check
Party Affiliation	Average party affiliation
Tenure	Average tenure per year
Gender	Average gender per year
Age	Average age when entering the government per year
World GDP growth	World GDP growth rate per year in decimal points

Note: The interpretation of the characteristics of the Prime Minister is not in averages due to that there has always been one Prime Minister in each government. Since the other ministerial portfolios sometimes have several values each year because of changes in portfolios they are interpreted in averages.

By conducting t-tests we conclude that the average level of education, experience and tenure is significantly different between the right- and left-wing parties at a 1 percent significance level, which indicate that there is a variation between the different governments. The average values are higher for the right-wing governments in all cases except for the last, that is, the average tenure is higher for left-wing governments. This is expected since left-wing governments have in total governed for more years than right-wing governments. Figure 1 displays the average educational attainment between the right- and left-wing governments. The bars represent the respective governments in the dataset over time. The largest difference occurs in the beginning of the dataset, where the right-wing governments have a substantial higher education level. This difference decreases throughout time, yet, in total the right-wing governments have a slightly higher education level than the left-wing.

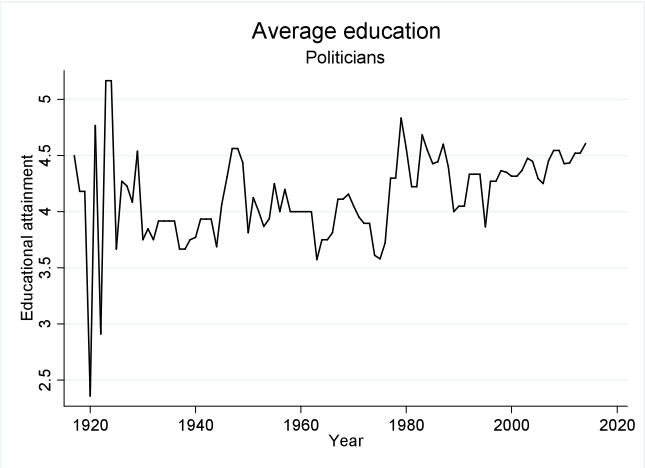
Figure 1: Average educational attainment between left- and right-wing governments



Source: Authors' dataset

Figure 2 displays the spread of average educational attainment across ministers and time in Sweden from 1917 to 2014. The first seven years of the dataset are very volatile, which is due to the fact that there are six shifts of government during this time period. The right-wing and left-wing governments was by turn governing Sweden and since the average education level is higher among the right-wing than the left-wing ministers, especially during this time period, this generates large changes in the beginning. Considering the fact that we have 98 data points in the dataset those first seven years could bias the results due to their volatile nature. Thus, on the basis of this the first seven years are dropped. The remaining dataset then consists of 22 governments, 292 different politicians and a total of 91 data points.

Figure 2: Average educational attainment each year from 1917 to 2014



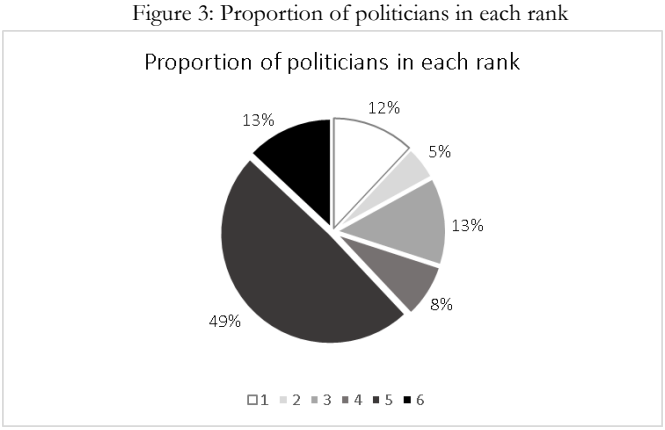
Source: Authors' dataset

Beyond the first seven years of the dataset there are a couple of years with peaks in educational attainment that stand out more, these occur in 1929, 1947 and 1979. In 1925 the left-wing Social Democratic Party, with an average educational level of 3.7 governed Sweden. During the years 1926-1928 the right-wing Liberal People's Party governed, with an average education level

somewhat higher than for the left-wing party. The peak occurs in 1929 when the right-wing Moderate Party took over, with an average education level of 4.5. The peak in 1947 however, does not follow the same clear pattern. In 1946 a left-wing Prime Minister took over after another left-wing Prime Minister, which had governed since 1933. After some replacements and transfers of minister portfolios the average education attainment peaked in 1947. The same Prime Minister was then in charge for three governmental periods, first with a pure left-wing government, then a coalition government and finally a pure left-wing government, with a total of 23 years. It is not until 1979 that the average educational attainment peaks again, when the right-wing parties won the election to parliament and formed a coalition government consisting of only right-wing parties.

The proportion of educational attainment in the dataset can be seen in Figure 3 and is distributed as follows: 13 percent are either readers or have a PhD or licentiate, whereas 49 percent have either a Bachelor or Master degree, 8 percent have studied in universities but not completed a degree, 13 percent that have completed special training beyond high school, 5 percent with a high school degree and finally 12 percent that completed no more than primary school.

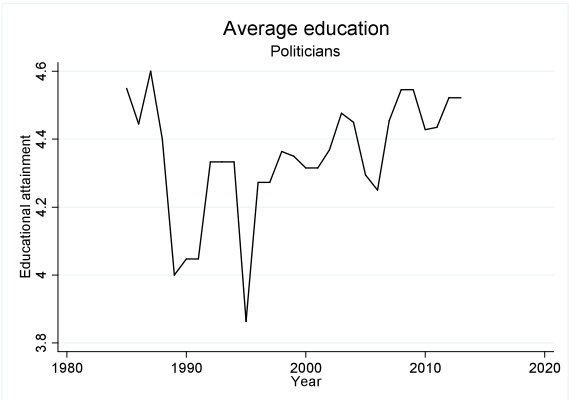
Figure 3: Proportion of politicians in each rank



Source: Authors' dataset

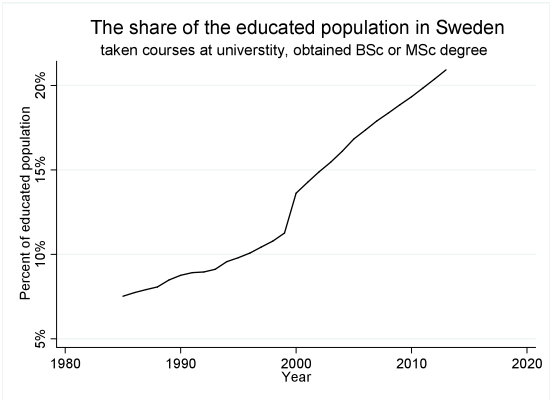
To put the politicians' educational level in perspective a comparison with the educational level among the Swedish population is shown in Figure 4 and 5 respectively. The time period ranges between 1985 and 2013 since data on educational attainment among the Swedish population was only available during this period. Figure 4 show a rather high average educational level among the politicians, comparing this to Figure 5, the proportion of the population in Sweden with similar educational attainment as the politicians is increasing steadily from approximately 7 percent to above 20 percent throughout the given time period.

Figure 4: Average educational level politicians



Source: Authors' dataset

Figure 5: Share of educated population in Sweden with similar educational attainment as the politicians

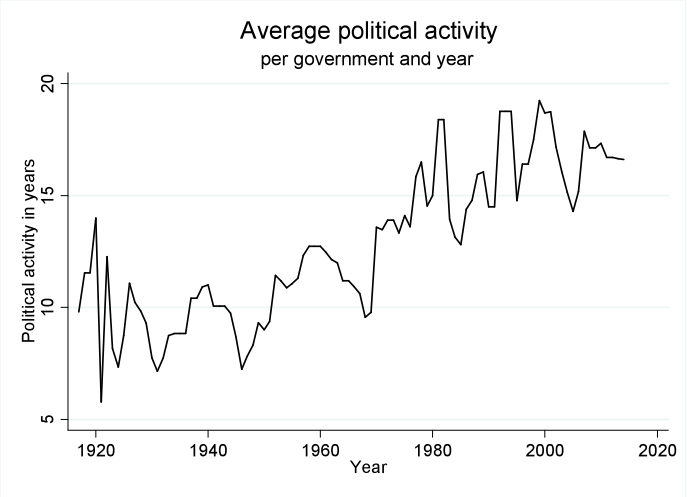


Source: Authors' dataset

As can be seen in the figures, the Swedish populations' education level has increased steadily during this time period, compared to the politicians that have a more volatile increase. However, the politicians have a substantially higher average in education level to the whole population.

With regards to the average experience among the politicians Figure 6 displays an increase over time. A first thought of the reason for this could be if the average age among the politicians also increased over time, which would give the individuals more time to gain more experience. However, the average age lie between around 45 and 52 years through most of the time period and from the 1980's and onward the data show a rather substantial decrease in average age. Nevertheless, a possible relation was found between the increase in experience and level of education. During the time period the number of politicians that falls into rank four, i.e. has taken courses at university level but not taken a specific degree, increases. Thus, a possible relation could be that instead of finishing an education the individuals switched to focus full time on politics. This is also consistent with the Swedish media, which has observed that the politicians' emphasise on gaining more experience in recent years (Sjöholm 2012).[6]

Figure 6: Average political activity in years



Source: Authors' dataset

Data reliability

Regarding the experience variable there might be a measurement error in the beginning of the dataset, when years of experience are reported to be much lower than in the second half of the time period. It could be the case that the documentation of experience was not so extensive in the earlier periods, which in such case would yield inaccurate average experience values. This might also be a problem in the education variable, since the data on these two variables are collected from the same sources. In order to mitigate the risk that a measurement error should be self-created we double-checked the data in more than one source whenever possible, yet, part of the data were only accessible through one source.

Method

5.4 Specification of the model

Estimating the causal effect of the politicians' educational attainment and political experience on growth can be challenging. The main potential problems are concerned with endogeneity. Firstly, considering the fact that GDP growth is a large variable affected by many different factors, there is a high risk for omitted variable bias. Another source of endogeneity is reverse causality, in this case

[6] Additional descriptives are to be found in Appendix A.

if economic growth may influence the level of education and experience of the politicians in power. This may for instance come about if poor economic outcomes increase the chances of incumbents losing power and if those bad times also put a premium on more educated and experienced politicians. In line with this argument, the probability that the current leader gets re-elected has in general been shown to be higher during economic booms (Fair 1978), meaning that leader transitions are often non-random. An additional issue that occurs when having data over time is that error terms from different time periods are correlated, causing serial correlation, which affect the efficiency of the estimates (Enders 2010).

5.4.1 Endogeneity

Omitted variable bias

To avoid the omission of variables, additional controls as mentioned earlier will be added to the model. However, control variables that sometimes are included in growth models such as private consumption, government consumption and CPI are here excluded as these are potential channels through which we believe the education and experience of the politicians may operate, as done similarly by Lindahl and Krueger (2001). Additionally, our study is focusing on business cycle effects from year to year and not long run growth, which make it different from standard growth empirics. For example in Romer's (1986) long run growth model it is argued that variables such as wage rates and capital-labour ratios across countries will converge over time and therefore current changes in the variables will not affect long run growth. Hence, since this thesis is studying yearly changes it is reasonable to exclude some of the variables that are common in long run growth models.

Sweden has a small domestic market and is highly dependent on international trade, thus, the country is very influenced by the world economic situation (Holmberg 2012). The Swedish politicians cannot influence the world economy and hence we assume that the effect of the world economy will not be captured in the education and experience variables. To deal with this the World GDP per capita growth rate will be introduced in the model as a control.[7] As in Krueger and Lindahl (2001) time dummies for the sample period that reflect the shocks that had the most impact on GDP growth are included in the regressions as a sensitivity analysis. Since shocks such as the Great Depression in 1931 and the Great Recession in 2009 are also reflected in World GDP variable, we will only add time dummies with regards to domestic recessions that was not caused by the world fluctuations in GDP. Examining the Swedish GDP growth together with the World GDP growth we only see one period that is not reflected in the World GDP growth rate. This period was caused by the domestic Bank, Finance- and real-estate crisis in 1992 and thus as a sensitivity analysis a time dummy for 1992 will be included. An interaction term between party affiliation and education will be introduced as a sensitivity analysis, allowing for a different return to education within the parties.[8]

Although controls are added to reduce the omitted variable bias problem, we cannot exclude the fact that this problem might still be present, hence we will be cautious interpreting the results.

[7] World GDP per capita have been collected using the Maddison dataset. During the data gathering process it has been very difficult to access data that covers the whole time period. Regarding the world GDP data the earliest observation was found from 1950 and onwards from the World Penn Tables. To deal with this issue we created a customized world GDP variable, where we looked at the countries that have been Sweden's largest export markets during the time period. These countries are mainly from Europe and the US (Sveriges Riksbank 2015).

[8] Considering the fact that GDP is a large variable affected by many other factors, we have considered to investigate an additional dependent that reflects the economic development of Sweden. We will further conduct the regression on Swedish growth in employment rate as sensitivity check, with the assumption that higher education and more experience would lead to a higher growth in the employment rate.

Reverse causality

In the case of Sweden, there does not seem to be any evidence showing that GDP growth has an effect on government support, and hence this problem might not be present in our dataset. However there is evidence that the support of the government decreases with higher unemployment rate, which suggest that there could be underlying economic factors that determines the ruling government (Elinder 2010). Hence, we cannot completely rule out this possibility, which may bias the results. To reduce this endogeneity problem, previous studies have looked at exogenous leader transitions, meaning leaders that left power during their tenure due to either death or illness (Jones, Olken 2005, Mercier 2013, Besley, Montalvo & Reynal-Querol 2011). They argue that the leader transition becomes random and hence there are no other underlying economic conditions determining the ruling leader in the country. This method cannot however be applied on our data since we do not have enough politicians in our dataset that left during tenure due to illness or death. Moreover, as a first step, the authors show that individual characteristics of leaders matter for GDP growth by studying leader fixed-effects on growth. One important factor to keep in mind when comparing this thesis to the previous literature that have studied the characteristics of politicians and their effect on growth is that they are all cross-country studies. In this study, we only conduct our research on one country, which means that we do not have a problem with countries having different features such as regime types and institutions governing the scope for policy making. For example, if we would compare an autocratic country with a low level of GDP growth to a democratic country with a high level of GDP growth, we would most likely overestimate the effect of education and overall political experience of politicians on GDP growth with a simple OLS. This problem could be reduced by using a country fixed-effect model, but some confounding cross-country differences are likely to be time variant. Therefore, focusing on the variation over time within a single country helps with some of the endogeneity problems involved in a cross-country setting, yet, it also means working with fewer observations.

To be able to assess whether a reversed causality problem is present we will perform Granger causality tests. These tests can help determine if one of the variables determines the other or if they are jointly determined by an outside factor, that is, when variables affecting growth are omitted in the model. A variable Granger-cause another variable if lagged variables of the former variable increases the predictive power of the latter (Enders 2010). More specifically, to see if the educational background of politicians impact growth or if growth impacts the educational background of politicians, we will run the following VAR model:

$$\Delta GDP(t)_i = \alpha + \sum_{j=1}^{q} \beta_j \Delta GDP(t-j) + \sum_{j=1}^{q} \gamma_i \, Education(t-j) + u(t)_i \quad (1)$$

$$Education(t)_i = \alpha + \sum_{j=1}^{q} \beta_j Education(t-j) + \sum_{j=1}^{q} \gamma_i \, \Delta GDP(t-j) + u(t)_i \quad (2)$$

Next we compute a Granger causality Wald test, where under the null hypothesis for (1) we have that the coefficients of the lagged $Education$ variables are jointly zero against the hypothesis that they are jointly different from zero. Similarly, we have that the coefficients of the lagged ΔGDP variables in (2) are jointly zero against the hypothesis that they are jointly different from zero. In each case, a rejection of the null implies there is Granger causality. The exact same procedure will be conducted for political activity and tenure.

Serial correlation

It is reasonable to assume that past values of GDP growth affects today's values of GDP growth. By comparing the different AIC and SBIC values of different autoregressive models, we conclude

that the optimal process for GDP growth is an AR(1) model. This is consistent with previous literature that often use an AR(1) model when measuring growth, emphasising that the former value of GDP growth is very important in determining future outcomes of GDP growth (Marcellino 2007, Ram 1986).

5.4.2 An ordinary least squares model with a first order autoregressive stochastic term

Finding a model applicable to the dataset, area of study and research questions has been challenging, since the current empirical models used is not appropriate in this setting. However, as explained earlier, lessons have been drawn from studies working close to the subject and their respective ways of approaching the topic. Heckelman (2000) is investigating the short-run causality between economic freedom and economic growth. The author employs an Ordinary Least Squares (OLS) approach when estimating the impact of economic freedom on growth and finds a statistically significant relation, arguing that an OLS analysis is a rather common use when estimating this relation. However, the author also argues that there is a possible problem with reversed causality and in that case the OLS is a less appropriate method to use and therefore performs a Granger Causality test. Dreher et al. (2009) also uses an OLS model when measuring the effect of leaders educational background and experience on market liberalizing reforms.

With support from the Heckelman study (2000) and Dreher et al. (2009) this thesis will use an OLS approach when estimating the effect of politicians' education and overall political experience on growth together with Granger causality test. Moreover, to increase the robustness of the results tests for heteroscedasticity, stationarity and autocorrelation will be conducted.

Furthermore, we will lag the characteristics of the politicians, since a reasonable assumption is that the decisions that the politicians make in the government do not have an immediate effect. As stated above the government proposes directions regarding the financial politics in Sweden two times a year. The directions in the propositions are usually gradually implemented within the coming year after the presentation of the proposal has been made. The government makes projections of the monetary consequences for the same year as the implementation as well as for the three next coming years (Regeringens proposition 2014). Hence it is reasonable to assume that the effect is postponed and thus we introduce lagged variables for the individual characteristics of the politicians. We will eliminate the unlagged characteristics of the politicians since we do not believe that the decisions made the current year will affect the growth rate the same year, however they will be included in a sensitivity analysis. An additional sensitivity analysis will be conducted, where all the regressions will be performed with the second definition of the political activity variable.

Based on the discussion above we will estimate an autoregressive model using OLS and ARIMA that looks as follows, where Δy_t is GDP per capita growth in Sweden at time t. The variable $education_{t-1}$ is the level of education among the politicians according to the defined rank at time $t-1$. Political activity and tenure is defined in number of years. Additional controls such as age, political party, world GDP per capita growth and year dummies are captured in X.

$$\Delta y_t = \beta_0 + \Delta y_{t-1} + \beta_1 education_{t-1} + \beta_2 political\ activity_{t-1} + \beta_3 tenure_{t-1} + \beta X_{t-1} + u$$

This regression will be applied both at the aggregated level for the different governments each year, but also for each ministerial portfolio. Since the ministerial portfolios have varied throughout the dataset, we will choose the ministerial portfolios that have existed almost during the whole time period. In addition, we choose the ministerial portfolios that have generally shown to have an

importance (Druckman, Warwick 2005), in particular for the economic development in terms of their responsibility. These are, the Prime Minister, Minister of Finance, Minister of Foreign Affairs, and Minister of Social Affairs. The Prime Minister has the ultimate responsibility in the government. The Minister of Finance is responsible for the national economic policies, which naturally affects the economic development. The responsibility for trade policies, which aims to create beneficial trade conditions for Sweden, lies within the ministerial of Foreign Affairs' portfolio. The responsibility for the Minister of Social Affairs has increased in connection to the expansion of the Swedish welfare state. The responsibility lies within health care, social benefits and insurances that are connected to high expenses in a welfare state (Regeringskansliet 2015).

6. Results

6.1 Do politicians' educational background and political experience matter?

As previously described, an autoregressive model using OLS and ARIMA has been used when assessing the effect of politicians' educational attainment and political experience on growth and Table 3 displays the results for the whole government.

Table 3: Results for the original model and sensitivity analysis-the whole government

	OLS	ARIMA	OLS	ARIMA	OLS	ARIMA
The whole government	(1)	(2)	(3)	(4)	(5)	(6)
L.Education	0.00263	0.00311	0.00206	0.00326	0.000411	0.00181
	(0.0107)	(0.0118)	(0.0108)	(0.0120)	(0.0110)	(0.0122)
L.Political Activity	-0.00144	-0.000969	-0.000986	-0.000918	-0.00128	-0.00119
	(0.00167)	(0.00226)	(0.00169)	(0.00211)	(0.00171)	(0.00215)
L.Tenure	0.00131	0.000278	0.00130	0.000350	0.00109	0.000167
	(0.00168)	(0.00198)	(0.00171)	(0.00203)	(0.00174)	(0.00203)
L.Party Affiliation	-0.00290	0.00308	-0.00595	0.00153	-0.00422	0.00313
	(0.00992)	(0.0123)	(0.0104)	(0.0113)	(0.0107)	(0.0133)
L.Gender	-0.000463	0.0199	0.00554	0.0193	-0.00267	0.0112
	(0.0405)	(0.0518)	(0.0395)	(0.0500)	(0.0393)	(0.0511)
L.Age	-0.000506	-0.00112	-0.00111	-0.00134	-0.000730	-0.000975
	(0.00207)	(0.00184)	(0.00208)	(0.00181)	(0.00203)	(0.00184)
World GDP	0.777***	0.778***	0.810***	0.797***	0.802***	0.792***
	(0.206)	(0.195)	(0.201)	(0.195)	(0.203)	(0.195)
L.World GDP	-0.455***	-0.211*	-0.401***	-0.180	-0.402***	-0.193
	(0.138)	(0.132)	(0.148)	(0.143)	(0.149)	(0.144)
L.GDP	0.306***	0.367***	0.308***	0.355***	0.289**	0.340***
	(0.130)	(0.155)	(0.134)	(0.161)	(0.139)	(0.169)
L.Interaction			0.0236	0.0162	0.0197	0.0144
			(0.0246)	(0.0265)	(0.0252)	(0.0260)
Year 1992					-0.0232**	-0.0212**
					(0.0103)	(0.00943)
Constant	0.0425	0.0524	0.0640	0.0623	0.0636	0.0607
	(0.0899)	(0.0936)	(0.0949)	(0.102)	(0.0944)	(0.101)
Interaction term	No	No	Yes	Yes	Yes	Yes
Year dummy	No	No	No	No	Yes	Yes
Observations	85	85	85	85	85	85
R-squared	0.523		0.532		0.538	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) and (2) in Table 3 show the results from the OLS and ARIMA regressions from the original model when the variables in the regressions are lagged one year.[9] The educational

[9] We conducted the regression for several lags where one lag appeared to be the most significant.

attainment coefficient is positive and the magnitude does not change much between the OLS and ARIMA model. The political activity coefficient is negative in both OLS and ARIMA and the tenure coefficient is positive. The magnitudes of the coefficients for both variables are small, the magnitudes change somewhat between the OLS and ARIMA estimation, but they remain small. However, except for the GDP coefficients, none of variables are significant at any conventional levels and thus the results need to be interpreted with care. Although we do not find significant results we observe consistent results over different model specifications, yet, it is not possible to draw any true conclusions with certainty.

We observe a positive coefficient on the lagged GDP growth variable throughout all the regressions displayed in this thesis. A possible explanation for this inconsistent sign could be because of the inclusion of the lagged world GDP growth variable, which turn out negative in the regressions, and may capture this effect and disturb the lagged GDP variable.

Sensitivity analysis

As a sensitivity check an interaction variable, between party affiliation and education, as previously described, is added to the regressions in column (3) and (4) in Table 3 allowing for a different return to education and political experience in different parties. Additionally, a year dummy for year 1992 is added in column (5) and (6).[10] The educational attainment coefficient stays positive throughout the regressions and the magnitude remains small as well. The same pattern can be seen in political activity and tenure where the sign remains the same and the magnitude is somewhat changed yet still small. Given the R-squared value in column (1) the model explains GDP growth to 52.3 percent, this increases slightly in column (3) and (5) yet not very much. Although the R-squared in Table 3 column (1) is rather high, the R-squared when excluding the characteristics in the model and only keeping the GDP variables is 49.8 percent, implying that the GDP variables explains the majority of the model.

As an additional sensitivity check we run the original regressions in column (1) and (2) with unlagged variables. The political activity coefficient is still negative and at the same time education becomes negative, compared to being positive in Table 3 and tenure is changing signs between the OLS and ARIMA model.[11] Now that the results of the whole government are displayed the results of the respective examined ministerial portfolios will be presented below.

6.2 Do individual ministerial portfolios matter in a democracy such as Sweden?

To examine the possibility that educational attainment and political experience within various ministerial portfolios matter differently, or if their effect is closely linked to the average within the group of ministers, a correlation test was performed. That is, the correlation between the average educational attainment within the minister portfolios and the average within the group of ministers. The same correlation test was conducted for political activity and tenure as well. The results for political activity and education yield a weak correlation indicating that the ministerial portfolios and the average within the group could affect GDP growth differently. However, the correlation between tenure among the ministerial portfolios and the average within the whole group is higher,

[10] See section 5.4.1 for motivation of variables. The inclusion of an interaction term commonly causes multicollinearity. In order to mitigate this the variables creating the interaction variables was centred prior to the generation of the interaction. The multicollinearity is then consistently controlled for with the Variance Inflation Factor (VIF), indicating that there are no strong evidences for multicollinearity in the regressions (Wooldridge 2009).

[11] As an additional sensitivity check the political activity variable in column (1) and (2) was replaced to the second conducted political activity variable, this did not change the sign of the coefficients and the magnitude was not affected notably.

indicating that there is not a substantial difference in the potential effects on growth, thus it may be difficult to expect differences in the tenure coefficients among the different ministerial portfolios and the overall government.[12]

Now that this is concluded we begin studying individual minister portfolios by computing the regressions, Table 4 show the respective results for the Prime Minister portfolio in the dataset. Column (1) and (2) in Table 4 show the results from the OLS and ARIMA regressions from the original model, that is, how the average educational attainment and overall political experience affect GDP growth in Sweden when the variables in the regressions are lagged one year.

Table 4: Results for the original model and sensitivity analysis-Prime Minister characteristics

	OLS	ARIMA	OLS	ARIMA	OLS	ARIMA
Prime Minister[13]	(1)	(2)	(3)	(4)	(5)	(6)
L.Education	-0.00416*	-0.00381	-0.00466**	-0.00525*	-0.00427*	-0.00495*
	(0.00216)	(0.00316)	(0.00223)	(0.00292)	(0.00225)	(0.00287)
L.Political Activity	-8.57e-05	-0.000867	0.000791	0.00129	0.000821	0.00127
	(0.000844)	(0.00123)	(0.00105)	(0.00144)	(0.00106)	(0.00142)
L.Tenure	0.00125	0.00112	0.000825	2.56e-05	0.000585	-0.000123
	(0.00101)	(0.00139)	(0.00107)	(0.00176)	(0.00110)	(0.00175)
L.Party Affiliation	0.00251	0.00101	0.00857	0.0179	0.0103	0.0192
	(0.0132)	(0.0138)	(0.0141)	(0.0185)	(0.0144)	(0.0186)
L.Age	5.06e-05	4.06e-05	0.000140	0.000145	0.000232	0.000235
	(0.000481)	(0.000654)	(0.000504)	(0.000648)	(0.000495)	(0.000652)
World GDP	0.819***	0.819***	0.823***	0.824***	0.814***	0.820***
	(0.192)	(0.180)	(0.193)	(0.176)	(0.193)	(0.175)
L.World GDP	-0.343**	-0.136	-0.349**	-0.165	-0.353**	-0.176
	(0.169)	(0.131)	(0.165)	(0.120)	(0.166)	(0.123)
L.GDP	0.246**	0.365	0.244*	0.434***	0.228	0.415*
	(0.139)	(0.224)	(0.141)	(0.236)	(0.147)	(0.249)
L.Interaction			-0.00542	-0.0136	-0.00558	-0.0130
			(0.00542)	(0.00948)	(0.00548)	(0.00936)
Year 1992					-0.0257***	-0.0183*
					(0.00946)	(0.0104)
Constant	0.0168	0.0326	0.000243	-0.00224	-0.00509	-0.00742
	(0.0258)	(0.0409)	(0.0304)	(0.0383)	(0.0305)	(0.0385)
Interaction term	No	No	Yes	Yes	Yes	Yes
Year dummy	No	No	No	No	Yes	Yes
Observations	85	85	85	85	85	85
R-squared	0.538		0.543		0.551	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The education coefficient is negative for the Prime Minister in Table 4 yet the magnitude of the coefficient is small. Regarding the OLS regression in column (1) the coefficient displays that when the educational attainment among the Prime Ministers increases one level according to the ranking

[12] See Table A1, A2 and A3 in Appendix A for correlation tables.
[13] Gender is excluded from the model since there is no variation in the variable, there have only been male Prime Ministers during the time period.

system in this thesis, it appears to affect the Swedish GDP growth negatively. This result is significant at the 10 percentage level, however, turning to the ARIMA results in column (2) the significance reduces but the coefficient remains at a similar level. Political activity is very small and negative in column (1) and (2) while the tenure coefficients are positive.

Comparing these values with the other three ministerial portfolios in Table 5[14] the education coefficient is positive throughout all the ministerial portfolios. The educational attainment within the Minister of Social Affairs is significant at the 10 percent level indicating a positive impact on growth, this also goes for the Minister of Finance in the ARIMA model. Additionally, as in the case of the Prime Minister, both political activity and tenure appears to be volatile in the signs of the coefficients, with a majority being positive. The coefficient becomes significant at the 10 percent level in the ARIMA model for the Minister of Social Affairs.

Table 5: Results for the original model-Minister of Finance, Foreign Affairs and Social Affairs

	Minister of Finance		Minister for Foreign Affairs		Minister for Social Affairs	
	OLS	ARIMA	OLS	ARIMA	OLS	ARIMA
	(1)	(2)	(3)	(4)	(5)	(6)
L.Education	0.00355	0.00614*	0.00379	0.00392	0.00475*	0.00506*
	(0.00254)	(0.00319)	(0.00234)	(0.00304)	(0.00241)	(0.00272)
L.Political Activity	0.000197	0.000498	-5.98e-05	0.000134	-0.000351	-0.000434*
	(0.000339)	(0.000415)	(0.000319)	(0.000554)	(0.000226)	(0.000260)
L.Tenure	0.00120	0.00113	0.000535	-0.000308	0.000411	-0.000165
	(0.00126)	(0.00118)	(0.00138)	(0.00166)	(0.000912)	(0.000997)
Constant	0.00708	0.0101	0.00836	0.0117	0.0209	0.0243
	(0.0323)	(0.0369)	(0.0283)	(0.0381)	(0.0226)	(0.0264)
Observations	83	83	84	84	85	85
R-squared	0.541		0.541		0.548	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Sensitivity analysis

As in the case of the whole government, an interaction variable and a year dummy for year 1992 are added as sensitivity analysis. The effect of educational attainment on growth for the Prime Minister in Table 4 appears to be significantly negative at the 10 and 5 percentage level when the interaction variable and year dummy are added, moreover, the magnitude of the coefficients remains quite similar. Political activity does not show a similar pattern as education, the coefficient is negative in column (1) and (2) but turns positive in the remaining columns. On the contrary, the tenure coefficient is positive throughout all the columns but the last.

When adding the interaction variable and the year dummy to the remaining portfolios as sensitivity analysis there are no major changes. For the Minister of Finance the coefficients for education, political activity and tenure remain positive.[15] The magnitude is small and rather similar as in the original model. Furthermore, education is significant at a 10 percent level in the ARIMA model when the interaction term is added and the R-squared value increases slightly as the variables are added.

[14] This is an abbreviated version, see complete version in Table A4 in Appendix A.
[15] See Table B5 in Appendix B.

Regarding the Minister of Foreign Affairs there are no notable changes in the variables, the education coefficient is still positive and the magnitude is very close to the original model.[16] Tenure also follows a similar pattern with a positive sign in the OLS model but negative in the ARIMA.

Lastly, the sensitivity analysis for the Minister of Social Affairs in Table 6[17] displays that the coefficient remains positively significant at the 10 percent level in educational attainments' effect on growth when the interaction variable is added. Moreover, there are no large changes in magnitude in the coefficients. Political activity is significantly negative at the 10 percent level except when both the interaction variable and year dummy are added in the OLS model. Tenure is positive in the OLS but negative in the ARIMA, just as in the original model in column (5) and (6) in Table 5, with small changes in magnitude of the coefficients.

Table 6: Sensitivity analysis for Minister of Social Affairs

Minister of Social Affairs	OLS	ARIMA	OLS	ARIMA
	(1)	(2)	(3)	(4)
L.Education	0.00453*	0.00464*	0.00408	0.00424
	(0.00253)	(0.00269)	(0.00266)	(0.00280)
L.Political Activity	-0.000384*	-0.000479*	-0.000339	-0.000448*
	(0.000225)	(0.000259)	(0.000228)	(0.000258)
L.Tenure	0.000283	-0.000428	0.000204	-0.000511
	(0.000912)	(0.000920)	(0.000928)	(0.000934)
L.Interaction	0.00305	0.00742	0.00258	0.00729
	(0.00641)	(0.00740)	(0.00643)	(0.00741)
Year 1992			-0.0178*	-0.0130
			(0.00904)	(0.00972)
Constant	0.0262	0.0367	0.0284	0.0386
	(0.0286)	(0.0327)	(0.0286)	(0.0323)
Interaction term	Yes	Yes	Yes	Yes
Year dummy	No	No	Yes	Yes
Observations	85	85	85	85
R-squared	0.550		0.553	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Throughout the original model and the sensitivity analysis the R-squared value for the Minister of Social Affairs lies slightly above the other three politicians'. Comparing the explanatory values of all the studied ministerial portfolios to the regressions with the whole government in Table 3, there are slight increases in all cases. That is, the sizes of coefficients for the ministerial portfolios are in general similar, yet slightly larger, than the coefficients of the explanatory values for the whole government.

As an additional sensitivity analysis the original models of the ministers, with lagged characteristics and no added interaction variable or year dummy, was run with unlagged variables. In general there are some changes in the signs of the coefficients and there is a decrease in significance.[18]

[16] See Table B6 in Appendix B.
[17] This is an abbreviated version, see complete version in table B7 in Appendix B.
[18] As an additional sensitivity check the political activity variable in the original models was replaced to the second conducted political activity variable, this created a couple of changes in some of the signs of the politicians' coefficients, otherwise the coefficients are still small.

The insignificant results together with the significant and contradictive results for the Prime Minister and significant results for the Minister of Social Affairs show that we do not find any consistent results. Perhaps this indicates that in a democratic setting it is unlikely that an individual minister have a substantial effect on growth.

Since we do not find any significant and consistent values for the educational attainment and overall political experience of the politicians we cannot accept the first hypothesis of the thesis, which is that the educational background and overall experience of the politicians have a positive effect on growth. As noted earlier, the second hypothesis is that the power of influence of educational attainment is higher than tenure and political activity. The power of influence over economic development appears to be higher for educational attainment than overall political experience. However, the results are not statistically significant meaning we cannot accept hypothesis three, increasing the confidence that the null hypothesis might be false.

With the obtained results we cannot accept the third hypothesis that the educational background and overall political experience of the whole group of ministers matter more than the educational background and overall political experience within the examined ministerial portfolios in this thesis. Due to the nature of the results we cannot accept the alternative hypothesis either.[19]

6.3 Diagnostic checks

In order to locate any possible problems with serial correlation in the residuals of the dependent variable and its lag the Portmanteau test for white noise was performed and for checking the presence of a unit root a Dickey-Fuller test for unit root was conducted (Wooldridge 2009). The Portmanteau test failed to reject the null of white noise, implying that there is no serial correlation in the residuals of the dependent variable. The Dickey-Fuller test rejects the null of a unit root indicating that a stationary process generates the dependent variable. Moreover, every regression has been tested for serial correlation in the residuals through the Durbin's alternative statistic for serial correlation.[20] We cannot reject the null of no serial correlation in the residuals of regressions, however this does not imply that we accept the null hypothesis of no serial correlation but we conclude that the data does not provide strong evidence against the null.[21] When the results support an assumption of no serial correlation in the regressions the Breusch Pagan test for heteroscedasticity can be applied. The test rejects the null of constant variance in all the regressions indicating that heteroscedasticity is present. When there is no serial correlation in the residuals but heteroscedasticity is present the heteroscedasticity-robust test statistics can be used in order to get valid confidence intervals and t-statistics (Wooldridge 2009) hence this method is applied to every regression with heteroscedasticity.

6.4 Granger causality

As previously described a Granger causality test could show if reversed causality is present. The hypothesis that GDP growth Granger cause the politicians' educational attainment is rejected at a 10 percent significance level whereas we fail to reject the hypothesis that education granger causes GDP.[22] This implies that the data do not provide strong evidence against the null hypothesis and

[19] Conducting the regressions on growth in employment yield inconsistent results, and hence are not further investigated.
[20] Since the model contains a lagged dependent variable the explanatory variables are not strictly exogenous, hence a regular Durbin-Watson statistic is not valid but Durbin's alternative statistic produces valid estimates in this setting (Wooldridge 2009).
[21] The regression with the characteristics of the Minister of Finance, as well as the Prime Minister sensitivity regression in column 3 in Table 4, yielded somewhat weaker results, here the test provided some evidence against the null since the t-statistic is close to the 10 percent critical value (Wooldridge 2009).
[22] See tables B1, B2 and B3 in Appendix B.

thus there might not be a problem with reversed causality in the relationship between growth and education. Regarding political activity and tenure the hypothesis of GDP growth Granger causing them cannot be rejected, similarly the reversed relation cannot be rejected either. Hence, there could be a potential problem with reversed causality in the relationship between GDP growth and overall political experience.

7 Discussion

The aim of this conducted research has been to study the relationship between the politicians' educational background, overall political experience and growth in an established democracy. The results do not indicate any significant and consistent results for the politicians' educational background and overall political experience affecting GDP growth. Next we will dig deeper to possible implication of the results, the sign of the coefficients and their significance.

7.1 Analysis of the main results

7.1.1 The background of the overall government

Although we find consistent coefficients in the original model, with a sensitivity check we do not find any robust and significant effects of our variables, which may suggest that education and political experience does not matter that much in an established democracy. However, there are weaknesses in our approach. Firstly, since we only have approximately 80 observations in the regressions, there could be a possibility that we have too few observations to make this kind of analysis. Secondly, since there is no problem with multicollinearity and the regression passes the usual diagnostic tests, there could also be a problem with the specified model. Moreover, there is a general concern with the robustness of the results since the education variable turns negative in the sensitivity analysis when only including unlagged variables. This could be because of a spurious negative relation, meaning that the politicians' background have no causal relationship with GDP growth in Sweden. Lastly, the fact that the Swedish- and world GDP variables by themselves explain the majority of GDP growth further adds to the difficulty of finding a true relation between the politicians' background and growth in this model. The above-mentioned drawbacks can be a reason for the weak results.

This thesis does not support the argument that educational background and political experience of politicians matter for growth in the Swedish context. Then again, we cannot say with confidence that the results credibly refute the argument.

7.1.2 The background of individual ministerial portfolios

The results for each ministerial portfolio vary depending on method used, ministerial portfolio, and control variable included, which may suggests that there is a possible problem with the robustness of the results. In Table 4 where only the Prime Minister is included, we find a negative significant effect obtained by OLS. However, this would suggest that having a higher educated leader leads to negative effects on GDP growth. One could question the reliability of the results since it does not make sense that a higher educated Prime Minister would make worse decisions leading to negative growth rate. As previous scholars suggest, a negative relationship between education and economic outcomes are most likely because of poor data and econometric problems (De la Fuente, Ciccone 2003, Lindahl, Krueger 2001, Cohen, Soto 2007).

We do find a positive significant effect of the educational background of the Minister of Social Affairs. Nonetheless, given that there are various problems with the specified model this could have contributed to the significance, and thus it is reasonable to assume that this is not a true relationship.

A plausible implication of these results can be that the effects of the educational background and political experience on GDP growth are too small to essentially show a casual relationship. Looking at the magnitude of the estimates they are also very small. However one has to bear in mind that the GDP coefficient is in decimals, and hence even if the magnitude would be small it could still imply a change in millions.

7.2 Endogeneity and validity

Given the fact that GDP is a large variable affected by many different factors, we cannot mitigate the possibility of omitted variable bias in the model specification above. The nature of the results above may suggest such a problem. However we will not discuss further which variables these might be since there are many potential factors affecting GDP.

From the Granger causality test we see that there is a reversed causality problem in the relationship between growth and overall political experience, yet, there is no strong support for such evidence in the relationship between growth and education. A problem with Granger causality implies a problem with the interrelationship between the dependent and independent variables (Enders 2010), in this case that current and past values of GDP growth in Sweden help to forecast future values of politicians' educational attainment and years of overall political experience. It is difficult to assess the exact mechanism of the reversed causality, however there are several possible interpretations that will be discussed below. For example, in case of a decline in the economy, the Prime Minister appoints individuals with higher education and more political experience to tackle the difficult upcoming task of turning around the economy, which relates to the previous discussions (Sjöholm 2012).

Another interpretation could be that when the economy worsens, voters may choose the party that has more highly educated and experienced leaders. At least this could be a potential interpretation of the negative significant result for the Prime Minister.

In general, other studies show that there is an increase in the likelihood of voting for the sitting party when there is an economic boom, however the same results have not been found in Sweden although the reverse causality test may indicate this could be the case. The Granger causality test for education does however reject the null hypothesis that GDP granger-causes education on a 10% significance level, which could indicate that there is no strong evidence for reversed causality in the relationship between growth and education.

The endogeneity problems discussed above decreases the validity of the results and specified model, moreover we have to take into account that we have very few observations and thus we have to interpret the results with care. The weak results may suggest that perhaps the politicians' educational background and overall political experience does not matter for GDP growth in Sweden. This could be related to the findings in Jones and Olken (2005), who find much weaker results for leaders impact on growth in democracies than in autocracies.

8 Conclusion

This thesis uses a new dataset of politicians that have had seats in the Swedish government between 1917 and 2014 to study if higher educated and more experienced politicians in the government matter for economic growth. This extensive dataset adds knowledge to two existing datasets covering the backgrounds of all the Swedish municipal politicians during the election periods between 1991 and 2006 (Rickne, Folke 2012) and 1998 and 2010 (Folke, Persson & Rickne 2014) respectively. The results do not provide evidence for a positive significant relation between the politicians' educational background, overall political experience and GDP growth. From the results it is not possible to draw a conclusion regarding which variables affect GDP growth the most since

we do not find consistent support for a positive effect of neither education nor overall political experience. It is likely that the data limitations, misspecification of the model and endogeneity problems may have influenced the results. Despite this shortcoming of the model the results could indicate that educational background and overall political experience among politicians in a democratic country does not affect growth, which could add to the emerging literature initiated by Jones and Olken (2005) and further developed by Besley Montavalo and Reynal-Querol (2011).

Since there is a possibility that the weak robustness of the results are due to few observations in the dataset, a possible suggestion for future research is to conduct cross-country studies with countries that have similar characteristics and political setting, i.e. the Scandinavian countries. A further suggestion for future research would be to study a smaller dependent variable that determines the economic development of a country since GDP growth is a very large variable affected by many different factors. With this said, we are also aware that this is a difficult variable to find over a longer time period.

An additional thought would be to conduct this study on a municipality or county council level, given the decentralised power in the Swedish democracy. Perhaps these politicians' educational background and overall political experience have a more direct effect on a municipality or county council level economic growth.

9 References

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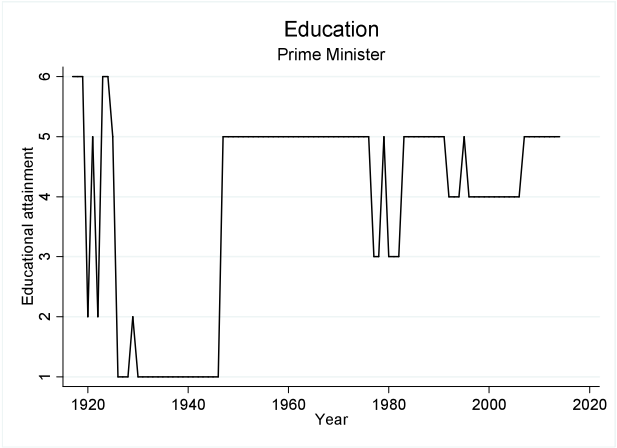
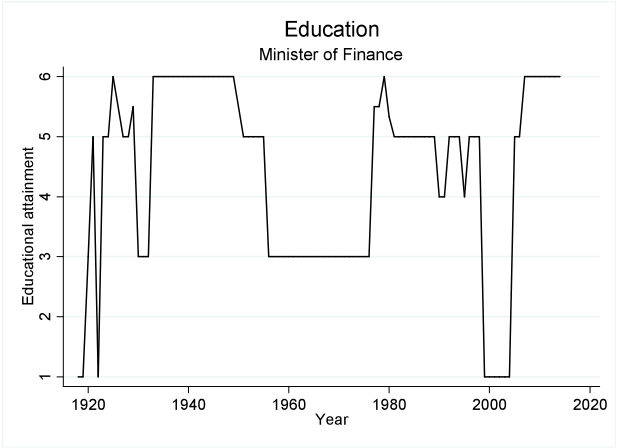
Appendices

Appendix A – Descriptives

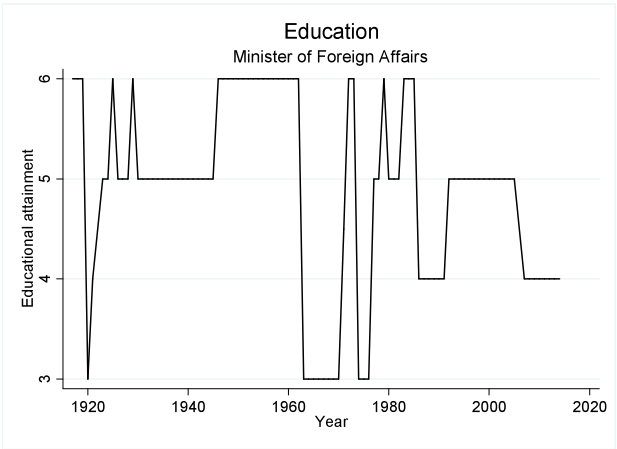
Figure A1, A2: Educational attainment for the Prime Minister and Minister of Finance each year from 1917-2014

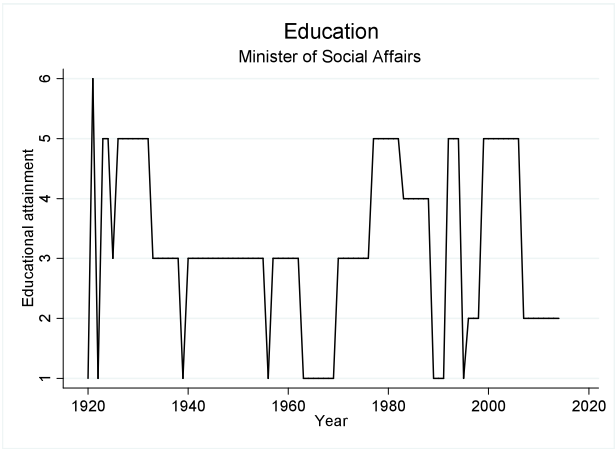




Source: Authors' dataset

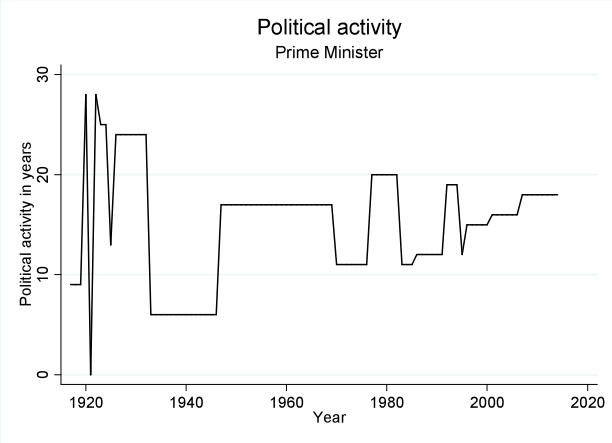
Figure A3, A4: Educational attainment for the Minister of Social Affairs and Minister of Foreign Affairs each year from 1917-2014

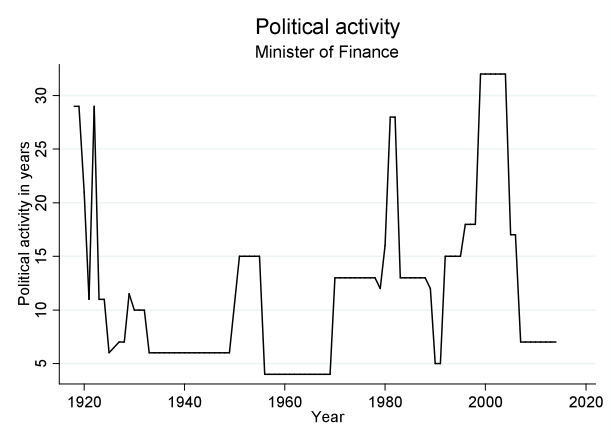




Source: Authors' dataset

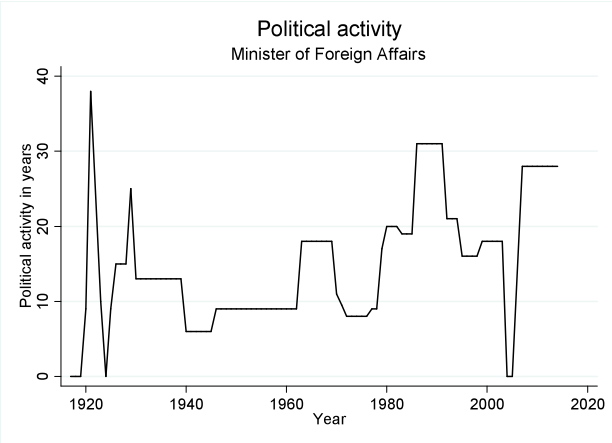
Figure A5, A6: Political activity for the Prime Minister and Minister of Finance each year from 1917-2014

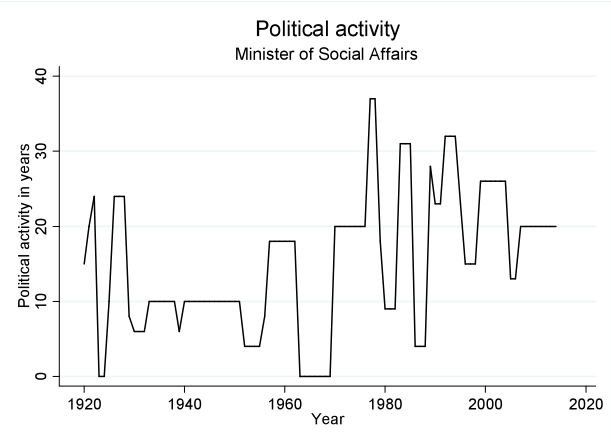




Source: Authors' dataset

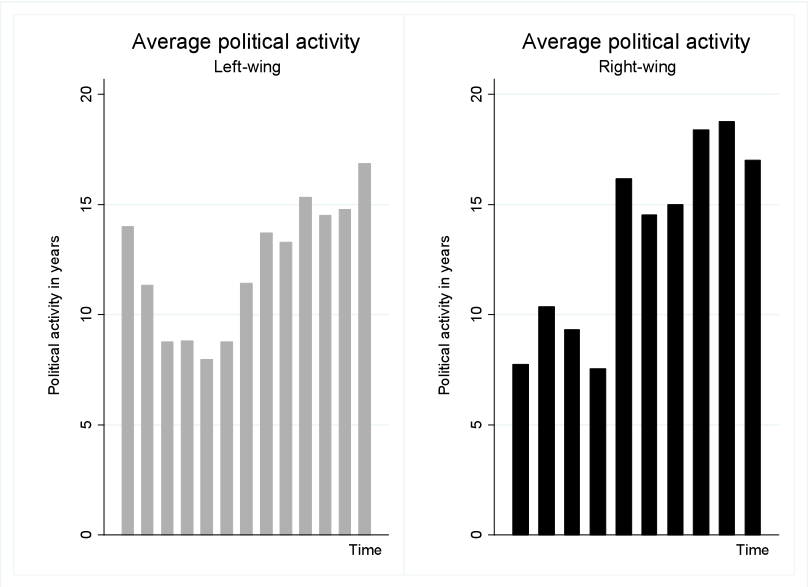
Figure A7, A8: Political activity for the Minister of Social Affairs and Minister of Foreign Affairs each year from 1917-2014





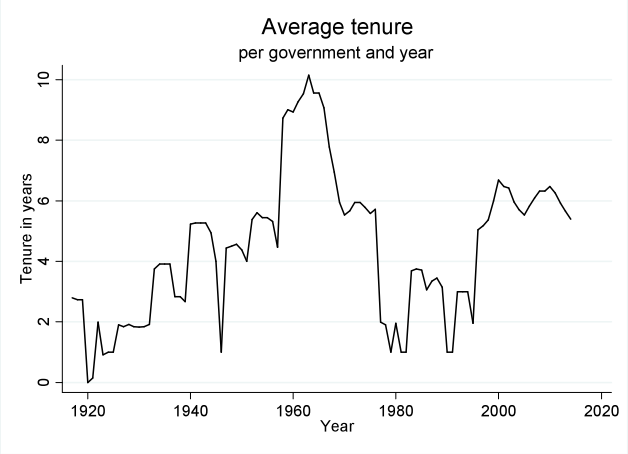
Source: Authors' dataset

Figure A9: Average political activity between left- and right-wing government



Source: Authors' dataset

Figure A10: Average tenure each year from 1917-1914



Source: Authors' dataset

Table A1: Correlation educational attainment

Education	Aggregate Education	Prime minister	Minister of Finance	Minister of Foreign Affairs	Minister of Social Affairs
Aggregate Education	1.0000				
Prime minister	0.3028	1.0000			
Minister of Finance	0.1927	-0.3128	1.0000		
Minister of Foreign Affairs	0.1767	-0.1604	0.1652	1.0000	
Minister of Social Affairs	0.3077	-0.3189	-0.1108	0.4107	1.0000

Table A2: Correlation experience of political activity

Experience	Aggregate Experience	Prime minister	Minister of Finance	Minister of Foreign Affairs	Minister of Social Affairs
Aggregate Experience	1.0000				
Prime minister	0.2306	1.0000			
Minister of Finance	0.5784	0.1651	1.0000		
Minister of Foreign Affairs	0.5040	0.2378	0.0273	1.0000	
Minister of Social Affairs	0.6042	0.094	0.3552	0.1271	1.0000

Table A3: Correlation tenure

Tenure	Aggregate Tenure	Prime minister	Minister of Finance	Minister of Foreign Affairs	Minister of Social Affairs
Aggregate Tenure	1.0000				
Prime minister	0.9437	1.0000			
Minister of Finance	0.9195	0.8782	1.0000		
Minister of Foreign Affairs	0.7497	0.7526	0.6785	1.0000	
Minister of Social Affairs	0.9465	0.8565	0.9284	0.6818	1.0000

Table A4: Results for the original model-Minister of Finance, Minister of Foreign Affairs and Minister of Social Affairs

	Minister of Finance		Minister for Foreign Affairs		Minister for Social Affairs	
	OLS	ARIMA	OLS	ARIMA	OLS	ARIMA
	(1)	(2)	(3)	(4)	(5)	(6)
L.Education	0.00355	0.00614*	0.00379	0.00392	0.00475*	0.00506*
	(0.00254)	(0.00319)	(0.00234)	(0.00304)	(0.00241)	(0.00272)
L.Political Activity	0.000197	0.000498	-5.98e-05	0.000134	-0.000351	-0.000434*
	(0.000339)	(0.000415)	(0.000319)	(0.000554)	(0.000226)	(0.000260)
L.Tenure	0.00120	0.00113	0.000535	-0.000308	0.000411	-0.000165
	(0.00126)	(0.00118)	(0.00138)	(0.00166)	(0.000912)	(0.000997)
L.Party Affiliation	0.00409	0.0150	0.00609	0.0127	0.0105	0.0166*
	(0.00906)	(0.0110)	(0.00609)	(0.00894)	(0.00794)	(0.00847)
L.Gender	0.000399	-0.0101	0.00320	0.000551	0.00777	0.0101
	(0.00937)	(0.0167)	(0.00562)	(0.00888)	(0.00599)	(0.00622)
L.Age	-0.000422	-0.000628	-0.000428	-0.000469	-0.000668	-0.000726
	(0.000446)	(0.000523)	(0.000382)	(0.000466)	(0.000489)	(0.000580)
World GDP	0.802***	0.804***	0.795***	0.796***	0.779***	0.784***
	(0.210)	(0.189)	(0.186)	(0.173)	(0.194)	(0.177)
L.World GDP	-0.534***	-0.189*	-0.483***	-0.170	-0.444***	-0.177
	(0.111)	(0.104)	(0.121)	(0.129)	(0.145)	(0.130)
L.GDP	0.409***	0.526***	0.357***	0.433***	0.313***	0.396***
	(0.118)	(0.148)	(0.122)	(0.151)	(0.117)	(0.128)
Constant	0.00708	0.0101	0.00836	0.0117	0.0209	0.0243
	(0.0323)	(0.0369)	(0.0283)	(0.0381)	(0.0226)	(0.0264)
Observations	83	83	84	84	85	85
R-squared	0.541		0.541		0.548	

***p<0.01,**p<0.05,*p<0.1

Appendix B - Sensitivity analysis

Table B1: Granger causality Wald test

Equation	Excluded	chi2	df	Prob>chi2
GDP	Education	0.4947	1	0.482
GDP	All	0.4947	1	0.482
Education	GDP	3.2932	1	0.070
Education	All	3.2932	1	0.070

Table B2[23]: Granger causality Wald test

Equation	Excluded	chi2	df	Prob>chi2
GDP	Political Activity	0.2335	1	0.629
GDP	All	0.2335	1	0.629
Political Activity	GDP	0.02275	1	0.880
Political Activity	All	0.02275	1	0.880

Table B3[24]: Granger causality Wald test

Equation	Excluded	chi2	df	Prob>chi2
GDP	Tenure	0.2233	1	0.637
GDP	All	0.2233	1	0.637
Tenure	GDP	0.66217	1	0.416
Tenure	All	0.66217	1	0.416

[23] The experience variable has been first differenced since it cannot be stationary in a Granger causality test (Enders 2010).
[24] The tenure variable has been first differenced since it cannot be stationary in a Granger causality test (Enders 2010).

Table B5: Sensitivity analysis for Minister of Finance

	OLS	ARIMA	OLS	ARIMA
Minister of Finance	(1)	(2)	(3)	(4)
L.Education	0.00346	0.00633*	0.00261	0.00586
	(0.00256)	(0.00329)	(0.00272)	(0.00357)
L.Political Activity	0.000278	0.000425	4.08e-05	0.000306
	(0.000396)	(0.000419)	(0.000473)	(0.000468)
L.Tenure	0.00143	0.000812	0.000745	0.000605
	(0.00131)	(0.00143)	(0.00154)	(0.00141)
L.Party Affiliation	0.00269	0.0172	0.00581	0.0173
	(0.00874)	(0.0128)	(0.00952)	(0.0124)
L.Gender	0.000874	-0.0123	0.000323	-0.00832
	(0.00924)	(0.0182)	(0.00939)	(0.0193)
L.Age	-0.000455	-0.000586	-0.000474	-0.000563
	(0.0004255)	(0.000519)	(0.000453)	(0.000519)
World GDP	0.805***	0.800***	0.795***	0.797***
	(0.214)	(0.189)	(0.216)	(0.189)
L.World GDP	-0.514***	-0.205*	-0.524***	-0.213*
	(0.128)	(0.115)	(0.128)	(0.117)
L.GDP	0.402***	0.542***	0.379***	0.521***
	(0.124)	(0.161)	(0.129)	(0.173)
L.Interaction	0.00260	-0.00358	9.81e-05	-0.00401
	(0.00667)	(0.00811)	(0.00708)	(0.00798)
Year 1992			-0.0281*	-0.0135
			(0.0144)	(0.0146)
Constant	0.00779	0.00987	0.0180	0.00952
	(0.0323)	(0.0371)	(0.0348)	(0.0380)
Interaction term	Yes	Yes	Yes	Yes
Year dummy	No	No	Yes	Yes
Observations	83	83	83	83
R-squared	0.541		0.550	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B6: Sensitivity analysis for Minister of Foreign Affairs

Minister of Foreign Affairs	OLS	ARIMA	OLS	ARIMA
	(1)	(2)	(3)	(4)
L.Education	0.00486	0.00483	0.00455	0.00449
	(0.00397)	(0.00384)	(0.00394)	(0.00382)
L.Political Activity	-4.99e-05	8.75e-05	6.52e-05	0.000234
	(0.000323)	(0.000489)	(0.000332)	(0.000508)
L.Tenure	0.000860	-2.62e-05	0.000411	-0.000479
	(0.00158)	(0.00172)	(0.00162)	(0.00180)
L.Party Affiliation	0.00618	0.0125	0.00784	0.0145
	(0.00611)	(0.00881)	(0.00637)	(0.00922)
L.Gender	0.00368	0.00105	0.00310	0.00177
	(0.00551)	(0.00877)	(0.00555)	(0.00841)
L.Age	-0.000431	-0.000507	-0.000367	-0.000452
	(0.000380)	(0.000435)	(0.000378)	(0.000430)
World GDP	0.793***	0.793***	0.790***	0.794***
	(0.185)	(0.172)	(0.186)	(0.171)
L.World GDP	-0.488***	-0.179	-0.482***	-0.187
	(0.125)	(0.132)	(0.126)	(0.134)
L.GDP	0.348***	0.430***	0.330***	0.419***
	(0.119)	(0.150)	(0.124)	(0.156)
L.Interaction	-0.00591	-0.00725	-0.00539	-0.00612
	(0.0157)	(0.0139)	(0.0156)	(0.0138)
Year 1992			-0.0257***	-0.0219**
			(0.00925)	(0.0106)
Constant	0.00156	0.00887	-0.000324	0.00552
	(0.0381)	(0.0379)	(0.0380)	(0.0375)
Interaction term	Yes	Yes	Yes	Yes
Year dummy	No	No	Yes	Yes
Observations	84	84	84	84
R-squared	0.543		0.550	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B7: Sensitivity analysis for Minister of Social Affairs

Minister of Social Affairs	OLS	ARIMA	OLS	ARIMA
	(1)	(2)	(3)	(4)
L.Education	0.00453*	0.00464*	0.00408	0.00424
	(0.00253)	(0.00269)	(0.00266)	(0.00280)
L.Political Activity	-0.000384*	-0.000479*	-0.000339	-0.000448*
	(0.000225)	(0.000259)	(0.000228)	(0.000258)
L.Tenure	0.000283	-0.000428	0.000204	-0.000511
	(0.000912)	(0.000920)	(0.000928)	(0.000934)
L.Party Affiliation	0.00722	0.00938	0.00802	0.00998
	(0.0121)	(0.0124)	(0.0122)	(0.0124)
L.Gender	0.00787	0.00954	0.00685	0.00855
	(0.00598)	(0.00630)	(0.00584)	(0.00624)
L.Age	-0.000679	-0.000758	-0.000684	-0.000756
	(0.000496)	(0.000591)	(0.000495)	(0.000589)
World GDP	0.788***	0.799***	0.784***	0.798***
	(0.204)	(0.183)	(0.207)	(0.184)
L.World GDP	-0.437***	-0.157	-0.441***	-0.164
	(0.144)	(0.122)	(0.144)	(0.122)
L.GDP	0.316***	0.418***	0.309***	0.415***
	(0.113)	(0.119)	(0.116)	(0.123)
L.Interaction	0.00305	0.00742	0.00258	0.00729
	(0.00641)	(0.00740)	(0.00643)	(0.00741)
Year 1992			-0.0178*	-0.0130
			(0.00904)	(0.00972)
Constant	0.0262	0.0367	0.0284	0.0386
	(0.0286)	(0.0327)	(0.0286)	(0.0323)
Interaction term	Yes	Yes	Yes	Yes
Year dummy	No	No	Yes	Yes
Observations	85	85	85	85
R-squared	0.550		0.553	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1