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Do Regional Politics Matter for Regional Growth?

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Abstract

This paper estimates the relationship between political instability and economic growth at the regional level. A panel of Swedish regions over the time frame 1994-2018 is used to conduct the empirical analysis. The empirical analysis consists of regressing regional growth rates in GDP per worker on a measure of political instability and a set of control variables. Growth rates are measured over a 4-year period that coincides with the election period. Political instability is measured in three different ways. That is, if the region is ruled by a minority government, if the region is ruled by an ideological mix of parties, and the number of parties ruling the regional government. An analysis at the municipal level is also conducted, where population-weighted shares of the political instability-variables and their effect on regional growth rates are investigated. The results of the empirical analysis are that political instability at the regional and municipal levels has no significant effect on regional growth rates, suggesting a weak relationship. When extending the time frame to cover 1973-2018 and investigating if regions ruled by governments with single-party majority experienced higher growth rates, a significantly positive effect at the 10%-level was found for the share of municipalities within the region with a single-party majority. This indicates that, even though results, in general, are insignificant and inconclusive, it might be worth conducting the same analysis in the future, when more data is available.

Keywords: Economic growth, political instability, Sweden, regions, municipalities.

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1. Introduction

A well-researched topic in the economic growth literature is the relationship between politics and economic growth. Different perspectives have been investigated, from the effect of democratization on growth (Barro 1996; Acemoglu et al. 2019), to the political business cycle (Nordhaus 1975; Drazen 2000). Previous research has established that in a cross-country setting, political instability seems to be negative for economic growth (Alesina et al. 1996; Aisen and Veiga 2013, for example). There are a few theoretical reasons for this. Unstable political regimes may lack the possibility of creating an optimal policy for economic development. It could also be the case that weak regimes care more about increasing their chance of being re-elected, and hence, are shortsighted in their policymaking process. Many policy actions are associated with affecting growth. From setting the legal framework and property rights, to setting policies that foster investment and the provision of public goods, such as education and healthcare. In Sweden, policy questions related to these issues are in many cases decided at the regional and municipal level. It would, therefore, be of interest to study the relationship between politically unstable regimes at the regional level and regional economic growth. That is the main purpose of this paper, and it is done by looking at the case of Sweden.

Sweden consists of 21 different regions, and each region contains a different number of municipalities. Elections in Sweden are held every fourth year at the national, regional, and municipal levels. Every level of government is in charge of different policy questions. The regions mainly deal with questions related to healthcare, public transport, culture, and tourism. It is also the objective of regions to strengthen overall development within the region (The Swedish Association of Local Authorities and Regions 2020a). Municipalities are responsible for all primary and secondary education, social and elderly care, and questions related to housing and the construction of new houses and buildings (The Swedish Association of Local Authorities and Regions 2020b). As is evident, regions and municipalities deal with policy questions that potentially affect growth. Weak and unstable local governments might not be able to create optimal policies regarding these questions. If regions and municipalities are not able to create the optimal policies, there might be consequences to the regional economy. If regions lag behind

economically, inequality in living standards among people from different regions might arise, and regions may not have access to equally developed healthcare and education systems, for example. If the economic standards within a region are bad, people might move to more lucrative regions, which could decrease the economic activity in the less developed regions even more.

Political instability might arise in different ways within the region and the municipality. Specifically, this paper will investigate three different measures of instability and their potential relationship to regional growth. The first one is if the region or the municipalities within the region are ruled by a minority government. This might hinder optimal policy being carried out since the opposition always can oppose a policy that they do not approve of. Another measure of political instability that is investigated is if the ruling government consists of ideologically different parties, further referred to as a mixed government. Because of the ideological differences among the ruling parties, the optimal policy might be hindered since parties have to compromise their policy stances. The last measure is the number of parties ruling the government. The argument as to why this might be unstable is the same for the mixed government measure. The more parties, the more each party has to compromise their views which can hinder optimal policy being carried out.

Most of the papers that have investigated the relationship between political instability have done this in a cross-country setting (Aisen and Veiga 2013; Alesina et al. 1996, for example). The result is generally that political instability negatively affects growth. There are a few papers that investigate the relationship at the regional level within a country (Libman 2012; Hiskey 2005, for example), where results have been more inconclusive. To my knowledge, there is only one paper that has included measures of political instability when investigating growth in the Swedish context. Lundberg (2003) investigates the relationship at the municipal level and finds no significant relationship between political instability and income growth. Pettersson-Lidbom (2008) finds that when municipalities are ruled by left-wing governments, unemployment is lower and tax rates are higher as compared to being ruled by a right-wing government. There are, to my knowledge, no papers that investigate both how regional and municipal political instability relate to regional growth in the Swedish context. That is what this paper aims to contribute to. Looking at political instability at the regional and municipal level within a country have advantages, compared to looking at the cross-country level. For instance, political systems might be heterogeneous among countries, making countries harder to compare. Another advantage is that the data used in the analysis is measured in the same way for every region, which

might not be the case for different countries (Snyder 2001).

The main finding of this paper is that the relationship between regional political instability and regional economic growth is weak. All three measures of political instability enter the regressions with a non-significant coefficient. This result is confirmed when performing a thorough sensitivity analysis. When expanding the data set to include more years, using estimated data, the results show that regions with a high share of municipalities ruled by a single party with majority have grown faster than other regions, significant at the 10%-level. This indicates that the weak relationship found could be due to a low amount of observations in the empirical analysis.

This paper will be structured as follows. First, the theoretical framework of the paper, together with a basic model of political instability will be presented. Second, a review of the previous literature on the topic will be conducted. Third, the data and the empirical approach will be presented. After that follows the results of the empirical analysis, and lastly a discussion and a conclusion that will sum up the main findings of the paper will be presented.

2. Theoretical foundation

In this section, the main arguments of some theoretical models related to political instability and growth will be presented. The section will end with introducing a basic theoretical model where political instability enters the function governing economic growth.

Theories about the relationship between politics and economic outcomes have been put forward and discussed for a long time. One early, influential theory is the one proposed by William Nordhaus (1975) about the political business cycle. In his theory, there exist two parties where one is holding power and the other one is the opposition. Individuals base their voting decision on their preferences over the economic policy that is associated with either party. In the theory, the choice for parties is the Phillips-curve trade-off between inflation and unemployment. The incumbent party can set the unemployment rate freely, and does this in a way that it maximizes its chances of being re-elected. Close to election years, low unemployment is associated with a successful government, which voters find important. The result of this, according to Nordhaus' theory, is a high unemployment rate at the beginning of the election period and a low unemployment rate at the end of the election period. This pattern can impose shortsighted

behaviour and may induce policy decisions that are not optimal for economic development in the long run. If the chances of being re-elected are small, the incumbent party is more likely to conduct shortsighted policy actions.

Alesina et al. (1996) discuss in their theoretical framework a similar argument as Nordhaus (1975). The authors argue that when the government in power faces a high probability of being replaced, policies related to investment and growth-enhancing measures are not optimal. Uncertain political surroundings might also make local firms move their production to another location, and is also argued to decrease foreign direct investment in the region. Alesina et al. (1996) also put forward that the effect of political instability on growth depends on the polarization of the parties fighting for power, and that when polarization is low, the effect on growth is likely to be smaller. The authors also argue that it might be the case that economic outcomes affect political instability by affecting voter preferences, especially close to elections, meaning that simultaneity bias might arise when conducting the empirical analysis.

Further, Devereux and Wen (1998) develops a theory that builds on similar reasoning as Nordhaus (1975) and Alesina et al. (1996). In the model, two parties exchange power and earn income by setting a capital tax. The two parties provide a public good and differ by the type of the good they provide, which is financed by the tax they set. Political instability enters the model by introducing that the incumbent party always faces a probability of losing power. This leads to a tax rate that is initially lower than optimal in the current period but will be higher than socially optimal future periods. Individuals know that the tax rate will be higher in the future, and will, therefore, invest less in capital than optimal, and growth will be negatively affected. In the absence of political instability, the incumbent party will stay in power forever and will set the tax rate optimally for government spending, and economic growth will be optimally high.

Darby, Li, and Muscatelli (2004) present a model more suitable for developed democracies, where political instability is related to shortsightedness in the ruling party's policy decisions regarding public spending and investment. The authors propose a model of two parties or two coalitions of parties, and the majority between these is decided by the median voter who changes political views stochastically. With an infinite time horizon, the incumbent party knows that it will not be in rule forever, leading to a sub-optimal growth policy. Increasing political uncertainty, in this context measured as the likelihood to change the ruling government, leads to a decrease in long term policy actions, which will lead to an increase in public expenditure, and growth will be lower than optimal.

2.1 Basic model of political instability and economic growth

The model presented here follows closely the basic model presented in Carmignani (2003). It stems from a standard neoclassical model.

In the model, all firms are assumed to be identical. Firms produce output according to the production function given by eq. (1).

$$Y_i = A(K_i)^\alpha (KL_i)^{1-\alpha} \quad (1)$$

There are important assumptions shown in eq. (1) that deal with capital accumulation. To start, it can be seen that firms become more productive in capital by investing in capital, referred to as learning by doing. It is also the case that the economy's total capital stock K , enters the production function for firm i , suggesting that capital is a public good that is available to all firms i and can be used to improve its productivity. The production function also exhibits a diminishing return to capital ($0 < \alpha < 1$).

Political instability is introduced in the model by stating that firms cannot be certain of keeping the entire share of its own produced output. This is because firms do not have information on the level of future taxes and are unaware of other economic events that could reduce the possibility for the firm to ensure it produced goods. In the model, firm i has a probability σ that the firm will keep the proportion λ of its own production, ($0 \leq \sigma \leq 1$) ($0 \leq \lambda \leq 1$). Using this information, expected profits for firm i will then be specified in the following way, shown in eq. (2).

$$E(\pi_i) = (1 - \sigma)Y_i - wL_i - (r + \delta)K_i + \sigma\lambda Y_i = (1 - \sigma + \sigma\lambda)Y_i - wL_i - (r + \delta)K_i \quad (2)$$

In eq. (2), r is equal to the price of capital, w is the wage rate, and δ is the capital depreciation rate. Political instability is then defined as in eq. (3)

$$p \equiv (1 - \sigma + \sigma\lambda) \quad (3)$$

Because of the properties of σ and λ , $0 \leq p \leq 1$. p is equal to 1 if either $\sigma = 0$, which is the case where there is no uncertainty about future income for the firm, or when λ is equal to 1, where the firm keeps its entire production no matter what the probability of the firm keeping its

production is. With this in mind, the firm maximizes its expected profit in eq. (2) by inserting eq. (1) and taking the first-order condition. Solving for r gives eq. (4).

$$r = p\alpha AL^{1-\alpha} - \delta \quad (4)$$

All individuals in the economy are identical, live for an infinite amount of periods, and optimize their choice of consumption and saving for each period. They optimize consumption by maximizing eq. (5).

$$U_j = \int_0^{\infty} \exp^{(-\rho-\eta)t} \left[\frac{c^{(1-\theta)} - 1}{1-\theta} \right] dt \quad (5)$$

U is utility over the entire life-span, c is consumption per capita, ρ is the individuals time preference parameter, η is the rate of population growth and the individuals' utility function is a constant intertemporal elasticity of substitution function. Individuals accumulate assets based on how much income they earn, which in this model is either an investment in capital or a loan. Assets are accumulated according to eq. (6).

$$\dot{a} = (r - \eta)a + w - c \quad (6)$$

Maximizing eq. (5) subject to eq. (6) gives the individuals optimal consumption path. Inserting eq. (4) in the optimal consumption function results in the Euler equation, shown in eq. (7), which denotes the growth rate in consumption per capita in steady-state. The growth rate of consumption is equal to the growth rate of capital and output.

$$\frac{\dot{c}}{c} = \frac{1}{\theta}(r - \rho) = \frac{1}{\theta}(p\alpha AL^{1-\alpha} - \delta - \rho) \quad (7)$$

From eq. (7), it can be seen that when political instability is high (p is low), then the growth rate will be lower than in the case when political instability does not exist ($p = 1$). This simple version of the neoclassical model shows how political instability enters the growth function by

imposing an uncertainty for firms about keeping the entire share of their output.

3. Previous Research

In this section, previous research on the topic of political instability and economic growth will be presented.

The existing literature on the topic of political instability and economic growth is quite extensive. Many papers try to lay out the theoretical foundation as to why political instability and economic growth are related. Most theoretical reasons as to why political instability could be harmful to economic growth deals with governments not providing policy dealing with property rights and legal framework (Svensson 1998), shortsighted governments not providing optimal investment policy and to use government finances on spending (Darby, Li, and Muscatelli 2004). Other theoretical models enter political instability by introducing that the incumbent party always faces a probability of losing power, and the higher that probability is, the more shortsighted policy actions are taken (Alesina et al. 1996; Devereux and Wen 1998).

Alesina et al. (1996), Aisen and Veiga (2013) and Jong-A-Pin (2009) are three examples of empirical papers that analyse different measures of political instability and its effect on economic growth. As many other papers also do, these papers analyse the relationship in a cross-country setting using a panel of countries over a time period. The measures of political instability vary from cabinet changes (Aisen and Veiga 2013), to the propensity of a government to fall (Alesina et al. 1996). Jong-A-Pin (2009) uses 25 different measures on political instability, including; government stability, the number of elections, years of the largest party in government, major constitutional changes, and many more. The papers tend to find a negative relationship between political instability and growth. Darby, Li, and Muscatelli (2004) also finds a negative relationship between political instability and growth in industrialised European countries, by looking at how different measures of electoral rule affects public spending and investment. The authors measure electoral rule in 6 different ways by the type of government regarding majority, the number of parties, and more. Although there seems to be a negative relationship between political instability and growth in GDP per capita, it has been questioned if this is a causal relationship. Campos and Nugent (2002) do not find a causal relationship between social-political instability and growth, using a Granger causality test. Another problem

with papers analysing political instability and economic growth is that many regressions suffer from measurement errors, and other econometric issues (Jong-A-Pin 2009; Haan 2007).

Although most papers use a panel setting when examining the relationship between political instability and growth, there are examples of papers who use time-series approaches. One example is the paper by Asteriou and Price (2001), who uses principal component analysis and GARCH-models to explain how political instability affects GDP-growth in the UK. Political instability was associated with a significant reduction in GDP-growth, according to the paper. The author was, however, not able to prove a causal relationship.

To my knowledge, there is one paper that uses political variables in regional growth regressions in Sweden. Lundberg (2003) looks at municipal growth in average income and includes a variable for a strong political majority (two-thirds of seats in local council) in the municipality, and also the Herfindahl index which measures political fragmentation. Political fragmentation is negatively associated with growth. However, both coefficients are statistically insignificant, which indicates that the relationships are not very robust.

There are a bunch of papers that have analysed growth in the regional setting in Sweden. This set of papers is used to understand regional growth patterns in Sweden and determine potential control variables for the empirical analysis. (Aronsson, Lundberg, and Wikström 2001) is one example of a paper that investigates the determinants of regional income growth. The authors regress the growth of average household disposable income on several different determinants between 1970-1995. Some of the variables found to explain income growth was the unemployment rate, the share of people with a university degree, different geographical variables, and also the initial level of income. A negative relationship between income growth and the initial level of average income was also found, which gives conformation to the convergence hypothesis, that initially poor regions grow faster than initially rich regions. The convergence hypothesis has been confirmed in the Swedish context over longer time horizons, by papers such as (Persson 1997), (DeJuan, Persson, and Tomljanovich 2012). Lundberg (2003) tests other variables than the political variables mentioned previously and finds that, for example, the level of human capital and the unemployment rate significantly explains municipal income growth. Lundberg (2006) extends his analysis of municipal income growth in Sweden, by using a spatial correlation model. The main result of the paper is that it seems that the growth rate in one region is dependent on economic circumstances of nearby regions. Henning, Enflo, and F. N. Andersson (2011) explore the long-run movements in Swedish regional GDP. Among the

conclusions are that growth in the latter part of the twentieth century was driven by the big city-areas and that in the short run, growth patterns among regions are quite heterogeneous. The importance of age characteristics in explaining regional growth in Sweden is put forward by B. Andersson (2001).

Elinder (2010) finds that regional economic circumstances seem to affect voting behaviour at the national level. An increase in regional economic growth is found to increase the vote share of the national government, however insignificantly. Economic circumstances are the change in the unemployment rate and the change in the growth rate. It could be possible that regional economic circumstances also affect regional voting behaviour. This could indicate problems with simultaneity bias that needs to be taken into account when conducting the empirical analysis, especially in order to prove a causal relationship.

Some papers investigate if political instability at the regional level affects regional economic growth in other countries than Sweden. For example, Libman (2012) investigates how political regimes at the regional level affect regional growth by studying the case of Russia. The measure of political regime the author uses is the size of the bureaucratic regional government, which is measured by the number of people working for the regional government. The result is that the size of the bureaucracy is associated with an increase in economic growth, however insignificant. Hiskey (2005) investigates how fast Mexican states recover after a negative macroeconomic shock, and how it is related to the political institutions within the states. That is done by regressing regional growth rates on the average municipal vote share for the big authoritarian party, as well as the difference in vote share between the biggest party and the main opposition party. The results indicate that more democratic states recovered faster after the negative shock. Rodríguez-Pose, Psycharis, and Tselios (2012) and Lambrinidis, Psycharis, and Rovolis (2005) are two examples of regional growth papers including a political variable among the explanatory variables. Both papers analyze regional growth in Greece and measure political power by the regional vote share on the biggest party in the national government, which, however, was found insignificant in both papers. Rodríguez-Pose, Psycharis, and Tselios (2012) also measure the relative political power by using the difference between the biggest party and the main opposition party as an explanatory variable which was found to significantly affect growth. Rodríguez-Pose, Psycharis, and Tselios (2016) investigate how different political measures affect regional public investments in Greece between 1975-2009. Political power was measured by the regional vote share on each of the parties, as well as members of parliament.

The result was that the higher the vote share on the incumbent party in a region, the higher was the regional public investment rate.

To summarize, there seems to be a negative relationship between political instability at the cross-country level. Some papers have, although, have a hard time proving a causal effect from political instability to growth (Jong-A-Pin 2009). The results on the regional level is more mixed, where some papers (Rodríguez-Pose, Psycharis, and Tselios 2012), (Hiskey 2005) finds a significantly negative relationship, and other papers do not (Lambrinidis, Psycharis, and Rovolis 2005), (Libman 2012). The only Swedish paper to use political stability measures in growth regressions is, to my knowledge, Lundberg (2003) who do not find any significant relationship between political stability and average income levels.

4. Data and Methodology

This chapter will begin by explaining the data used. After that, the empirical specification used in the analysis will be introduced. Lastly, potential econometric issues that could arise with the empirical approach will be discussed.

4.1 Data

To measure economic growth, this paper uses data on regional GDP per worker (GRP)¹. The political variables are calculated using election results combined with data on who ruled in the local government. A set of control variables is used to capture the effects of other mechanisms that affect growth. The control variables are such that have been found to explain regional growth in the Swedish context before, for example, initial GRP, the unemployment rate, the share of people with high education, population density, and age characteristics. Data on GRP, election results and all control variables are gathered from Statistics Sweden (2020). Data on who was ruling the local government in the different regions and municipalities are gathered from The Swedish association of Local Authorities and Regions (2020). The time frame that data is gathered from is 1994-2018, for the 21 Swedish regions. The reasons for this are twofold. First, official statistics on GRP is only available from 1993-2018. Second, aggregate data on which parties that ruled in each region and municipality are available from 1994-2018. Since

¹The GRP-data is adjusted for inflation (CPI).

there was an election every fourth year from 1994, this time frame consists of 6 election periods and a total of 126 observations available to use in the study. The number of observations would preferably be higher, but the data availability limits us to this number. It will, however, be possible to conduct a longer analysis with estimated GRP-data from Olsson Spjut (2010) and election results. That increases the time-span to include the years between 1973-2018, which consists of 13 election periods for the 21 regions, rendering in a total of 273 observations. The measure of political stability will in this case be single-party majority, that is if a region or municipality was ruled by a single party with a vote share higher than 50%. Summary statistics on GRP-growth, the explanatory variables and the control variables can be found in table 4.1, table 4.2 and table 4.3. A complete list of the variables used in the empirical analysis and their definitions can be found in the appendix A.2.

As is evident from table 4.1, the average 4-year growth rate over the election periods was 8.47% and varies from 5.97% for Halland which is the lowest, to 10.30% for Norrbotten, which is the highest. Two of the regions containing big cities, Stockholm and Västra Götalandsregionen are among the regions with the highest average growth rate.

Table 4.1: Average regional growth rates

	Growth rate
Blekinge	6.99%
Dalarna	6.81%
Gotland	9.98%
Gävleborg	7.05%
Halland	5.97%
Jämtland	6.79%
Jönköping	8.87%
Kalmar	8.57%
Kronoberg	8.99%
Norrbottn	10.30%
Skåne	8.64%
Stockholm	10.03%
Södermanland	8.27%
Uppsala	10.08%
Värmland	9.15%
Västerbotten	8.26%
Västernorrland	7.88%
Västmanland	7.39%
Västra Götalandsregionen	9.96%
Örebro	8.83%
Östergötland	9.01%
Total	8.47%
Observations	126

Note: This table shows the inflation-adjusted average 4-year growth rate coinciding with the election period for every region, over the entire sample.

Table 4.2 displays the average of the explanatory variables for every election year. Minority is a dummy variable equal to 1 if the region is ruled by a minority (total vote share <50%) and 0 otherwise. Mixed Gov is also a dummy variable equal to 1 if the region is ruled by a mixed government and 0 otherwise². Parties is the number of parties ruling the government. If, for example, region Stockholm is ruled by the moderates (M), the center party (C), the liberal party (L), and the Christian Democrats (KD), and they have an accumulated vote share of 46.3% as was the case in the 2014 election, it is defined as a minority government that is not mixed, with 4 parties ruling the government. If it instead was ruled by M, KD, L, C, and the green

²Among the eight biggest parties, there are 3 parties defined as left-wing; The Social Democrats (S), the left party (V), and the green party (MP), and 4 parties that are defined as right-wing; the liberal party (L), the center party (C), the Moderates (M) and the Christian Democrats (KD). The Sweden Democrats (SD) stand on their own, but have only been in power in local governments after the 2018 election. A ruling government is mixed if it contains at least one left-wing and one right-wing party, according to the definition above. There are cases where other, often local parties have been in rule, but these parties are for simplicity assumed to be neither right nor left, so it does not affect if the government is mixed or not.

party (MP) with 51.6% of the votes as in the 2018 election, it will be defined as a majority and mixed government, with five parties ruling. For the municipalities, the variable is calculated as the weighted share of municipalities ruled by a minority government, a mixed government, and the average number of parties ruling the municipality government within the region. The municipalities are weighted by population, such that highly populated municipalities are given a larger weight than low populated municipalities. The weight is calculated by dividing the population of the municipality with the total population of the region. For the minority variable, the value will be a share between 0 and 1 for every region. It is 0 if no municipality has a minority government and it will be 1 if every municipality is ruled by a minority government. The mixed gov variable is constructed in the same way. For the party-variable, it will be the weighted average of the number of parties ruling the municipality, within the specific region.

As can be seen in table 4.2, which shows the average of every explanatory variable for every election year, the share of regions with a minority government has increased from 9.5% in 1994 to 28.6% in the 2014 election. This pattern is also evident for the municipalities, where the weighted share of municipalities with a minority rule has increased from 15.8% in 1994 to 47.9% in 2014. The share of regions with a mixed government is similar in all periods, but showing the highest numbers in the last two periods. At the municipality level, the weighted share of mixed governments within the region has increased from 13% in 1994 to 44.6% in 2014. The average number of parties in rule has increased throughout the years. In 2014, there were on average 3.8 parties in rule as compared to 1.9 in 1994, within the regions. The highest average number of parties in rule within the municipalities was in 2006 and has since then decreased to an average of 3.2 in the 2014 election. It seems to be the case that, according to these measures, political instability at the regional and municipal levels have increased during the last 24 years.

Table 4.2: The explanatory variables for every election period

	Regional Minority	Regional Mixed Gov	Regional Parties	Municipality Minority	Municipality Mixed Gov	Municipality Parties
1994	0.095	0.238	1.913	0.158	0.130	2.158
1998	0.107	0.250	2.042	0.204	0.160	2.949
2002	0.190	0.190	2.667	0.288	0.184	2.697
2006	0.190	0.238	3.143	0.227	0.213	3.406
2010	0.238	0.333	3.429	0.314	0.241	3.345
2014	0.286	0.333	3.762	0.479	0.446	3.210
Total	0.185	0.264	2.826	0.278	0.229	2.961
Observations	126					

Note: This table shows the mean for the explanatory variables for every election period. Regional (Reg.) denotes the regional government, and municipality (Mun.) denotes the by population weighted share of municipalities within the region for the variables. The years denote which year the election took place which determine the outcomes of the explanatory variables.

Table 4.3 shows the descriptive statistics for the control variables used in the empirical analysis.

Table 4.3: Control Variables

	Mean	SD	Max	Min	Count
GRP	5.330	0.176	5.785	4.850	126.000
Unemp	0.072	0.017	0.115	0.031	126.000
POPDENS	43.776	60.415	328.675	2.525	126.000
HighEd	0.086	0.031	0.189	0.041	126.000
Share1524	0.125	0.008	0.149	0.109	126.000
Share6574	0.097	0.013	0.132	0.068	126.000
<i>N</i>	126				

Note: This table shows descriptive statistics for the control variables. GRP is the log of initial GRP per worker for every election period. All other variables are measured as the average over the election period. Unemp is the unemployment rate, POPDENS is population density measured as the number of residents per square kilometer, HighEd is the share of people with a university degree, Share1524 is the share of people of age 15-24, and Share6574 is the share of people of age 65-74.

4.2 Empirical approach

In this section, the econometric specification used in the empirical analysis will be presented. The baseline model is a fixed effects panel regression model. Some previous papers use a dynamic panel data model, where the system generalized method of moments (system GMM) is a popular choice to treat possible endogeneity in the explanatory variable. But since the number

of time periods used in the empirical analysis is limited to 6 periods, a system GMM would reduce the number of observations even more since it uses lags of the dependent variable in the regression (Arellano and Bond 1991). Therefore, this paper will use a fixed effect regression model, which also is dynamic in the sense that it controls for the initial level of GRP. Including lagged variables in the fixed effects model might lead to the coefficient on initial GRP being biased, but since it is a control variable, no emphasis is put on the coefficient. The model will be specified in the following way:

$$\ln(Y_{i,t+1}/Y_{i,t}) = \beta_0 + \beta_1 \text{PoliticalInstability}_{i,t} + \theta_i + \lambda_t + \mu_{it} + \varepsilon_{i,t} \quad (8)$$

The dependent variable denotes the growth rate in GRP per worker for region i from time t (first year of the election period) to $t+1$ (last year of the election period). Growth is measured over a 4-year period which coincides with the election period. The reason for this is that it is likely that it takes time for the ruling government to induce their policies and also for the policies to have an effect. Measuring growth over a 4-year period makes it possible to capture the long-term effect of political instability, as compared to measuring growth annually. *PoliticalInstability* denotes the measurement on political instability taken from the election year in the beginning of the election period, which in this paper is measured in three different ways, described in section 4.1. The measures are minority government (dummy variable), mixed government (dummy variable), and the number of parties ruling the regional government. There will be one regression for each measure of political instability, which means a total of three regressions of the main specification. Since all variables measure a weaker form of government, β_1 is expected to be negative in all three cases if it is the case that political instability leads to lower growth. In eq. (8), β_0 is the constant, θ and λ denote regional and yearly fixed effects, $\mu_{i,t}$ denote the set of control variables and $\varepsilon_{i,t}$ is the error term.

This study will also test if political instability at the municipal level affects the regional growth rate. The same specification as in eq. (8) is used, the only difference is that the weighted share of the political variables have to be used since there are many municipalities within a region. Otherwise, political instability is measured in the same 3 different ways as for the regions. The first one is the weighted share of municipalities in region i at time t ruled by a minority government, the second one is the weighted share of municipalities ruled by a mixed government and the third one is the weighted average of the number of parties in rule. This specification will also end up in three regressions, one for each measure of political instability. The municipalities

are weighted by population, meaning that political instability in big municipalities will have a larger weight than political instability in small municipalities.

The policies conducted during the election period might affect growth first in the next election period. Especially policies that are enforced in the latter part of the election period. Therefore, there will also be a test of the lag of *PoliticalInstability* on growth, which is taken from the election results in the preceding election period. With an already low number of observations, reducing them even more might seem counterintuitive, but it might still present some interesting results. The regression will be specified as in eq. (9).

$$\ln(Y_{i,t+1}/Y_{i,t}) = \beta_0 + \beta_1 \text{PoliticalInstability}_{i,t-1} + \theta_i + \lambda_t + \mu_{it} + \varepsilon_{it} \quad (9)$$

In eq. (9), β_1 measure the effect of political instability in the previous election period on the growth rate of the current time period. This analysis is done on both the regional and the municipal level, where the political instability variables are constructed in the same way as before, besides from being measured at the previous election period. β_1 is assumed to be negative if political instability in the previous period affects growth in the current period negatively.

4.3 Econometric issues

There are potential issues within the econometric framework of this paper. The most obvious is the number of observations. It might be the case that 126 observations are too few to reach significant conclusions on the relationship between political instability and growth at the regional level. It is, however, hard to solve that problem due to the data limitations. One could add regions from other countries similar to Sweden, but this would increase the heterogeneity among regions, and it might be that the election periods do not match between countries. It will be partly solved by increasing the time span using estimated GRP-data together with the election results. The data on who rules in each region and municipality only exists from 1994 and onward, but it is possible to investigate if regions with single-party majority grow faster than other regions.

Many potential factors are affecting regional growth. One such factor that is left out of the analysis of this paper is the share of people working in different sectors, such as agriculture, manufacturing, for example. It has been found important in explaining regional growth (Lundberg 2003), and could potentially be important in the case of Sweden, where the composition

of the labour force varies among regions. This is left out of the analysis due to data limitations. Leaving out important factors might generate omitted variable bias. This is, however, partly solved by the inclusion of regional and time fixed effects.

Measurement errors could also arise in different ways, although likely to be small in this paper. Statistics Sweden changed its way of calculating GDP in the mid of the sample, but this has a small effect on the growth rates. If it should be a problem, the error is likely to be equally big for all regions.

A thorough sensitivity analysis will be performed to check the robustness of the results of the empirical analysis. Different specifications of the models will be tested. Another measure of the dependent variable will also be tested, namely the growth in household disposable income to see if the results are similar. There will also be a test of another measure of political instability, that is if the local government changes the ruling coalition from one election period to another, referred to as new rule. A test of the interaction between the minority variable and the other two instability variables is also conducted, to try to capture the effect of an unstable regime.

5. Results

This chapter will present the results of the paper. First, the results of the main regressions will be presented. After that, results when investigating the lag of the explanatory variables will be presented. Tables include regressions at both the regional and municipal levels. Lastly, this chapter will present the robustness checks of the main results in the sensitivity analysis.

5.1 Main results

The regression results of the main specification will be presented in this section. For every measure of political instability, there will be one OLS-regression with only the political instability measure as the explanatory variable, one regression with all controls, and one with controls and time fixed effects. The section will start by presenting the results where minority rule is the explanatory variable, then continue with mixed government, and lastly present the result where the number of parties is the measure of political instability.

Table 5.1 presents the results where GRP-growth is regressed on the regional and municipal minority-variables. The coefficient on the minority rule variable is positive, but insignificant in all regressions. This is true both when looking at minority rule in the region, and the share of municipalities with minority rule within the region. All control variables come with the expected sign, and most of them seem to significantly affect growth. For example, initial GRP affects growth negatively, which indicates that initially poor regions have grown faster than initially rich regions. It should be noted that this estimate is likely to be biased, since it is likely to be correlated with the error term, but since this is just a control variable, not much emphasis is put on this estimate. One can also see that the share of highly educated people within the region is positively associated with growth, for example.

Table 5.1: Minority Government

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Minority	0.00596 (0.0186)	0.0123 (0.0121)	0.00918 (0.0136)			
Mun. Minority				0.0183 (0.0217)	0.0243 (0.0148)	0.0163 (0.0124)
GRP		-0.657*** (0.0626)	-0.798*** (0.0828)		-0.680*** (0.0713)	-0.790*** (0.0930)
HighEd		3.265*** (0.545)	2.451** (1.014)		2.986*** (0.598)	2.162** (1.004)
Unemp		-0.783* (0.408)	-0.320 (0.656)		-0.534 (0.401)	-0.285 (0.632)
POPDENS		-0.00103* (0.000499)	-0.000273 (0.000576)		-0.000644 (0.000538)	-0.000222 (0.000558)
Share1524		-6.322*** (1.006)	-0.324 (2.207)		-6.657*** (1.034)	-0.482 (2.299)
Share6574		1.197* (0.642)	0.957 (1.442)		1.310** (0.612)	0.687 (1.399)
Cons.	0.0836*** (0.00343)	4.078*** (0.330)	4.030*** (0.457)	0.0796*** (0.00605)	4.132*** (0.372)	4.041*** (0.514)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	-0.007	0.688	0.729	-0.004	0.686	0.726
F	0.103	118.8	73.03	0.709	157.7	78.64

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In table 5.2, one can see the results when political instability is measured as being ruled by a mixed government. From now on, controls are not reported in the tables unless they show unexpected results¹. When looking at the results for the regional rule, the coefficient is as expected, negative, however only significant at the 5%-level in the OLS-regression without controls. When adding the controls and time fixed effects, the coefficient is still negative, however, both low and statistically insignificant. When looking at the share of municipal governments with a mixed government, the coefficient is of mixed signs and insignificant in all specifications.

Table 5.2: Mixed Government

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Mixed Gov	-0.0274** (0.0121)	-0.00336 (0.00991)	-0.00244 (0.0108)			
Mun. Mixed Gov				-0.00156 (0.0327)	0.0252 (0.0279)	0.0192 (0.0214)
Cons.	0.0919*** (0.00319)	4.100*** (0.361)	4.066*** (0.500)	0.0850*** (0.00747)	4.120*** (0.373)	4.045*** (0.524)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.009	0.673	0.726	-0.008	0.677	0.728
F	5.113	121.0	75.99	0.00229	121.5	89.39

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5.3 shows the result when the explanatory variable is measured as the number of parties. Looking at the number of parties ruling the region, the coefficient is significantly negative when no control variables are included. The significance of the coefficient is, however, lost when adding control variables and including fixed time effects. The same pattern emerges when looking at the weighted share of parties ruling in the municipal governments within the regions. The coefficient is negative and significant in the simple OLS-version without controls, but the significance is lost with the inclusion of controls and fixed time effects.

¹Complete results are available upon request.

Table 5.3: Number of Parties

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Parties	-0.0208*** (0.00445)	-0.00235 (0.00462)	-0.00197 (0.00434)			
Mun. Parties				-0.0447*** (0.00816)	0.00737 (0.0101)	0.00595 (0.00864)
Cons.	0.143*** (0.0126)	4.089*** (0.356)	4.052*** (0.477)	0.217*** (0.0242)	4.196*** (0.415)	3.990*** (0.559)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.113	0.674	0.726	0.156	0.675	0.727
F	21.80	118.0	84.43	29.97	128.8	78.76

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

It may be the case that the effect of political instability on GRP-growth is first seen in the next election period. Therefore, the lags of the political instability variables are evaluated to see if they are associated with growth. The results are shown in table 5.4, table 5.5 and table 5.6. By looking at the results, it seems that none of the lags of the measures of political instability are related to GRP-growth since all results are insignificant, both when looking at the regional rule and the weighted share of the municipal rule. The coefficients are mostly negative, but since they are insignificant and close to 0 in most cases, the effect of having a weaker form of government in the previous election period on growth in the current period is likely to be small or nonexistent.

Table 5.4: Lagged Minority Government

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Minority ₋₁	-0.0186 (0.0296)	-0.00307 (0.00807)	-0.0117 (0.0106)			
Mun. Minority ₋₁				0.0296 (0.0467)	0.0375 (0.0267)	0.0391 (0.0261)
Cons.	0.0793*** (0.00486)	5.235*** (0.492)	4.836*** (0.374)	0.0692*** (0.0111)	5.224*** (0.457)	4.799*** (0.389)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	-0.002	0.723	0.776	-0.001	0.735	0.786
F	0.394	196.7	103.8	0.401	229.9	114.4

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5.5: Lagged Mixed Government

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Mixed Gov ₋₁	-0.00319 (0.0338)	-0.00689 (0.0150)	-0.00731 (0.0164)			
Mun. Mixed Gov ₋₁				-0.0755 (0.0449)	-0.0137 (0.0286)	-0.0197 (0.0246)
Cons.	0.0771*** (0.00844)	5.244*** (0.506)	4.816*** (0.396)	0.0903*** (0.00832)	5.171*** (0.515)	4.776*** (0.402)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	-0.010	0.723	0.773	0.019	0.723	0.774
F	0.00894	179.5	119.9	2.837	216.0	140.7

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.6: Lagged Number of Parties

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Parties ₋₁	-0.0163*	0.000681	0.0000491			
	(0.00833)	(0.00529)	(0.00442)			
Mun. Parties ₋₁				-0.0256**	0.000443	-0.00403
				(0.00987)	(0.0132)	(0.0136)
Cons.	0.119***	5.239***	4.856***	0.151***	5.243***	4.820***
	(0.0220)	(0.482)	(0.399)	(0.0287)	(0.495)	(0.390)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	0.049	0.722	0.773	0.046	0.722	0.773
F	3.806	196.4	114.4	6.705	195.2	109.5

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.2 Sensitivity analysis

In this section, different specifications are tested to see how sensitive the results are. The section starts by expanding the data set to include more years (1973-2018) in the analysis, and testing if regions ruled by a single-party majority have experienced higher growth rates than other regions ruled by more parties. A test of the weighted share of municipalities ruled by a single party majority will also be conducted. This coefficient is expected to be positive since it measures a stable political regime. In most cases, it is the same party within a region or municipality that has ruled, which indicates a stable political rule. The problem here is that estimated data on GRP (Olsson Spjut 2010) has to be used, but when comparing the estimated data to the official data for the years both exist, the differences are small. Differences that appear seem to be equally big among regions, which is positive. The estimated data allows us to increase the number of periods in the study to 13 for every 21 regions, rendering in a total of 273 observations. Unfortunately, some of the control variables are not available at this time frame, but it is still possible to control for the initial level of GRP, the unemployment rate, and the age characteristics. Including regional and time fixed effects should reduce the risk of omitted variable bias. Before 1994, elections were held every third year instead of every fourth year, but using the yearly average of the growth-rates over the election period should make the periods

comparable.

The effect of a single-party majority on growth can be seen in table 5.7. The coefficient on the single-party majority-variable on the regional level is positive, although insignificant. Looking at the municipal level, there seems to be a positive and statistically significant relationship between single-party majority and regional growth at the 10%-level when including time fixed effects. The results suggest that when the weighted share of municipalities within a region ruled by a single party majority increases, the average yearly growth over the election period also increases. It should be noted that unemployment unexpectedly enters with a positive sign in some of the specifications but since it is just a control variable, not much focus is put on why that is the case.

Table 5.7: Single-Party Majority

	(1)	(2)	(3)	(4)
	Growth	Growth	Growth	Growth
Reg. Single-Party Majority	0.00420 (0.00298)	0.00100 (0.00236)		
Mun. Single-Party Majority			0.0114 (0.00698)	0.00726* (0.00397)
InitialGRP	-0.0289*** (0.00431)	-0.102*** (0.0124)	-0.0274*** (0.00384)	-0.104*** (0.0119)
Share1524	-0.547*** (0.113)	-0.0564 (0.227)	-0.539*** (0.0933)	-0.0550 (0.218)
Share6574	0.372*** (0.104)	0.0946 (0.320)	0.361*** (0.0981)	0.103 (0.303)
Unemp	0.205*** (0.0469)	-0.227* (0.128)	0.210*** (0.0469)	-0.207 (0.137)
Cons.	0.0887*** (0.0168)	0.173*** (0.0397)	0.0848*** (0.0169)	0.173*** (0.0396)
Controls	Yes	Yes	Yes	Yes
Time Fixed Effects	No	Yes	No	Yes
<i>N</i>	273	273	273	273
adj. <i>R</i> ²	0.090	0.708	0.094	0.710
F	34.71	262.5	34.10	256.1

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

To further test the sensitivity of the results, another dependent variable is tested. Instead

of growth in GRP per worker, the dependent variable is here measured as the regional average household disposable income. This means that initial income is used as a control variable, instead of initial GRP, as previously done. The results using the main specification with the growth rate in household disposable income as the dependent variable is shown in table 5.8, table A.1 and table A.2. Table 5.8 is presented below, and table A.1, and table A.2 are presented in the appendix. In general, the results are insignificant for the different measures of political instability, especially when controls and fixed time effects are included. This suggests that political instability at the regional and municipal does not seem to be related to growth in average household disposable income.

Table 5.8: HDI-Growth, Minority Government

	(1)	(2)	(3)	(4)	(5)	(6)
	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth
Reg. Minority	0.00852 (0.00560)	0.00273 (0.00523)	0.00198 (0.00353)			
Mun. Minority				0.0104 (0.00956)	0.000111 (0.0115)	-0.00309 (0.00697)
InitialIncome		-0.245*** (0.0834)	-0.229*** (0.0745)		-0.245*** (0.0812)	-0.229*** (0.0727)
HighEd		2.586*** (0.500)	-0.0222 (0.316)		2.592*** (0.496)	-0.00301 (0.316)
Unemp		0.687** (0.269)	0.206 (0.222)		0.693** (0.264)	0.227 (0.215)
POPDENS		-0.00118*** (0.000311)	0.000351** (0.000147)		-0.00121*** (0.000293)	0.000315** (0.000150)
Share1524		-3.205*** (0.519)	0.0849 (0.702)		-3.219*** (0.504)	0.0902 (0.680)
Share6574		-0.952** (0.339)	0.134 (0.442)		-0.954** (0.378)	0.182 (0.401)
Cons.	0.104*** (0.00103)	2.732*** (0.731)	2.144*** (0.682)	0.102*** (0.00266)	2.728*** (0.714)	2.140*** (0.664)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.001	0.306	0.860	-0.003	0.305	0.860
F	2.312	23.12	217.9	1.194	23.73	108.1

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The lags of the explanatory variables are also tested on household disposable income growth as the dependent variable, as specified in eq. (9). Table 5.9, table A.3, and table A.4 shows the results for this specification. By looking at the results of table 5.9, one can see that a minority government in the previous period has a statistically significant negative effect at the 5%-level on HDI-growth in the current period when controls and time fixed effects are included. This suggests that HDI-growth over a 4-year period is 0.67 percentage points lower if the region was ruled by a minority government in the preceding period. This effect could, however, not be found when looking at the lag of the share of municipalities ruled by a minority government, where results are statistically insignificant. When political instability is measured as the lag of mixed government or the lag of the number of parties, results are insignificant and close to 0 both when looking at the regional and the municipal levels. The results for the lag of mixed government and the lag of the number of parties are shown in table A.3 and table A.4, which can be found in the appendix.

Table 5.9: HDI-Growth, Lagged Minority Government

	(1)	(2)	(3)	(4)	(5)	(6)
	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth
Reg. Minority ₋₁	-0.00354 (0.00426)	-0.00384 (0.00319)	-0.00657** (0.00311)			
Mun. Minority ₋₁				-0.00816 (0.00922)	-0.00833 (0.00580)	-0.00804 (0.00590)
Cons.	0.117*** (0.000701)	4.034*** (0.677)	3.778*** (1.023)	0.119*** (0.00220)	4.100*** (0.688)	3.743*** (1.002)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	-0.007	0.589	0.698	-0.003	0.594	0.700
F	0.687	13.66	42.72	0.783	13.73	37.34

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A measure of political instability that has been used in the previous literature is if there is a change in rule from one election period to another (Asteriou and Price 2001, for example). A new rule is defined as a change in the ideology of the ruling parties, from left-wing to right-wing or vice versa. The results when regressing the growth rates on the new regime variable can be found in table 5.10. At the regional and the municipal level, the variable enters with a negative coefficient, however, without significance when controls and fixed time effects are included.

Table 5.10: New Rule

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. New Rule	-0.0309*	-0.00355	-0.00447			
	(0.0156)	(0.0111)	(0.00901)			
Mun. New Rule				-0.0911***	-0.0105	-0.0188
				(0.0257)	(0.0153)	(0.0199)
Cons.	0.0918***	4.113***	4.057***	0.108***	4.170***	4.105***
	(0.00358)	(0.375)	(0.499)	(0.00670)	(0.331)	(0.500)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.023	0.673	0.726	0.100	0.674	0.729
F	3.943	108.5	115.6	12.58	131.9	93.11

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

To capture a higher level of political instability, interactions of the explanatory variables are tested. A test of the interaction between minority and mixed gov, as well as between minority and the number of parties is shown in table 5.11 below, and in table A.5 in the appendix. The interaction between mixed gov and the number of parties is not tested, due to the high correlation between the variables. One would expect, that a minority government that is also mixed or also has a large number of parties, would be more unstable than a non-mixed government with few parties. However, the results are insignificant and inconclusive, as can be seen in table 5.11 and table A.5.

Table 5.11: Interaction between Minority and the Number of Parties

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Minority	-0.0211 (0.0292)	0.0371 (0.0411)	0.0178 (0.0480)			
Reg. Parties	-0.0217*** (0.00400)	0.0000672 (0.00453)	-0.000320 (0.00410)			
Reg. Min*Reg. Part	0.00775 (0.0119)	-0.0105 (0.0139)	-0.00374 (0.0160)			
Mun. Minority				-0.0238 (0.0969)	0.0539 (0.0515)	0.00776 (0.0422)
Mun. Parties				-0.0478*** (0.0135)	0.0129 (0.00981)	0.00804 (0.00863)
Mun. Min*Mun. Part				0.0135 (0.0309)	-0.00747 (0.0199)	0.00419 (0.0133)
GRP		-0.642*** (0.0677)	-0.786*** (0.0666)		-0.688*** (0.0765)	-0.779*** (0.0954)
HighEd		3.177*** (0.598)	2.479** (1.016)		3.188*** (0.565)	2.342** (0.965)
Unemp		-0.803* (0.441)	-0.324 (0.673)		-0.850* (0.410)	-0.269 (0.639)
POPDENS		-0.00104** (0.000486)	-0.000316 (0.000556)		-0.000885* (0.000468)	-0.000247 (0.000518)
Share1524		-6.501*** (1.036)	-0.409 (2.133)		-6.021*** (0.862)	-0.0819 (2.404)
Share6574		1.441** (0.672)	1.063 (1.602)		1.136* (0.606)	0.930 (1.484)
Cons.	0.146*** (0.0103)	4.003*** (0.355)	3.970*** (0.465)	0.222*** (0.0413)	4.170*** (0.395)	3.884*** (0.554)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.101	0.675	0.724	0.147	0.679	0.726
F	14.85	146.0	77.71	12.28	107.2	142.3

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6. Discussion

By looking at the results, it is evident that the results for most regressions are insignificant. This suggests that the relationship between political instability on the regional and municipal level and GRP-growth in Sweden is weak. There are some potential reasons for the weak relationship found in the empirical analysis of this paper. First of all, it might be the case that the 126 observations used in the main specification are too low to find the true relationship. The limitation of the number of observations in this paper has to do with the existing data. One could potentially increase the number of observations by including more countries in the analysis, but that would probably infer heterogeneity regarding the election system and other country specific factors. Another way would be to look directly at the municipal level instead of the regional level, increasing the number of groups from 21 to 290. The problem with looking at GRP at the municipal level is that many people live in one municipality but work in another. This problem also exists at the regional level but to a smaller extent. It was possible to increase the number of observations by using estimated GDP data together with election results for longer periods. Measuring political instability as regions or the share of municipals within the region ruled by a single party majority, it was possible to construct a data set from 1973-2018, with 276 observations in total. The result was that regions with a high share of municipals ruled by a single party majority were associated with a higher yearly average growth rate, being statistically significant at the 10%-level. Although only being significant at the 10%-level, this indicates that it could be useful to investigate the same research question in a couple of years, when more data is available.

Second, it could be possible that regional and municipal politics have no or a small effect on regional growth. There might be a small difference in political parties' policy stance when it comes to regional politics, such that a weaker government still can conduct a nearly optimal growth policy. This argument is brought up by Alesina et al. (1996), who argue that when polarization is low, the relationship between political instability on growth could be weak. It has become harder to form a majority government with only parties of the same political ideology in Sweden today, as compared to previous days. In order to form a government, parties, es-

pecially in the middle of the political scale might have had to give up on some of their views, which might have reduced the differences in policy stances among parties. One can also argue that, even though regional and municipal politics deal with policy questions that are related to growth, it could be that regions develop according to the general business cycle and that the variation among regions in growth rates that occur are attributed to other factors, such as the unemployment rate and the level of human capital, for example. Policy actions taken at the national level might also be of higher importance than policy actions taken at the regional and municipal levels.

Although previous literature typically finds a negative relationship between political instability and growth at the cross-country level (Aisen and Veiga 2013; Jong-A-Pin 2009; Darby, Li, and Muscatelli 2004), results on the regional level are more mixed. The only Swedish paper that uses political variables in regional growth studies is the one by Lundberg (2003), who finds an insignificant relationship between political stability measures and regional growth at the municipal level. Other regional growth papers in other countries show significant results (Hiskey 2005; Rodríguez-Pose, Psycharis, and Tselios 2012), but some papers show insignificant results (Libman 2012; Lambrinidis, Psycharis, and Rovolis 2005). Therefore, the results of the empirical analysis in this paper are similar to the results of previous papers, who have had a hard time proving a significant relationship between political instability on regional growth. The papers that find significant results have had a hard time proving the relationship to be of causal nature. It should be noted that these papers look at regional growth in Mexico, Russia, and Greece, countries that are not very similar to Sweden. It seems to be the case that the relationship between political instability and growth is more evident at the cross-country level than at the regional level, even though the literature has not yet been able to show a causal relationship.

7. Conclusion

This paper has tried to establish a relationship between political instability at the regional and municipal level and regional economic growth, by looking at the 21 Swedish regions. By testing, if regional economic growth was affected by political instability measured as minority rule, mixed government, and the number of parties using a fixed effects regression model, no significant relationship could be found. The reason for this could be that the number of observations used in this analysis might be too low to establish the relationship. When increasing the number of observations by using estimated data, a significantly positive relationship between the share of municipalities within a region ruled by a majority government and regional growth at the 10%-level was found. This suggests that it might be relevant to investigate the relationship between regional political instability and regional growth in future research when more data is available.

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A. Appendix

A.1 Regression Results

Table A.1: HDI-Growth, Mixed Government

	(1)	(2)	(3)	(4)	(5)	(6)
	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth
Reg. Mixed Gov	-0.00192 (0.00575)	0.00124 (0.00813)	-0.00202 (0.00279)			
Mun. Mixed Gov				0.0220** (0.0103)	0.00948 (0.0108)	-0.00266 (0.00488)
Cons.	0.106*** (0.00152)	2.732*** (0.724)	2.143*** (0.678)	0.100*** (0.00237)	2.710*** (0.718)	2.171*** (0.695)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
N	126	126	126	126	126	126
adj. R^2	-0.008	0.305	0.860	0.009	0.307	0.860
F	0.111	23.81	150.5	4.523	24.32	116.8

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: HDI-Growth, Number of Parties

	(1)	(2)	(3)	(4)	(5)	(6)
	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth
Reg. Parties	0.00630*** (0.00151)	0.000328 (0.00214)	-0.000329 (0.00140)			
Mun. Parties				0.0304*** (0.00288)	0.0254*** (0.00568)	-0.00160 (0.00344)
Cons.	0.0875*** (0.00426)	2.723*** (0.719)	2.174*** (0.634)	0.0151* (0.00854)	2.348*** (0.589)	2.179*** (0.706)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.036	0.305	0.860	0.294	0.432	0.860
F	17.46	23.35	111.6	111.4	16.32	124.0

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: HDI-Growth, lagged Mixed Government

	(1)	(2)	(3)	(4)	(5)	(6)
	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth
Reg. Mixed Gov	-0.0112*** (0.00278)	-0.00309 (0.00286)	-0.00152 (0.00248)			
Mun. Mixed Gov				0.00478 (0.0120)	0.00287 (0.00985)	0.00312 (0.00798)
Cons.	0.120*** (0.000694)	3.963*** (0.687)	3.679*** (1.036)	0.116*** (0.00222)	3.980*** (0.686)	3.658*** (1.041)
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	0.012	0.591	0.691	-0.009	0.590	0.691
F	16.31	12.97	24.11	0.159	10.86	28.74
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	0.012	0.587	0.688	-0.009	0.589	0.696
F	16.31	11.40	26.94	0.159	12.33	37.94

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: HDI-Growth, lagged Number of Parties

	(1)	(2)	(3)	(4)	(5)	(6)
	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth	HGrowth
Reg. Parties ₋₁	-0.00443*** (0.000876)	0.000446 (0.00150)	-0.000463 (0.00155)			
Mun. Parties ₋₁				-0.0148*** (0.00382)	-0.00200 (0.00317)	0.000440 (0.00262)
Cons.	0.128*** (0.00231)	3.959*** (0.806)	3.720*** (1.009)	0.160*** (0.0111)	4.176*** (0.842)	3.925*** (1.012)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	105	105	105	105	105	105
adj. <i>R</i> ²	0.035	0.586	0.688	0.184	0.590	0.696
F	25.50	12.61	115.0	14.93	10.80	36.50

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: Interaction between Minority and Mixed Government

	(1)	(2)	(3)	(4)	(5)	(6)
	Growth	Growth	Growth	Growth	Growth	Growth
Reg. Minority	-0.00770 (0.0196)	0.0146 (0.0154)	0.0135 (0.0163)			
Reg. Mixed Gov	-0.0348** (0.0135)	0.00221 (0.0120)	0.00429 (0.0122)			
Reg. Min*Reg. Mix	0.0801*** (0.0203)	-0.0188 (0.0229)	-0.0368 (0.0232)			
GRP		-0.659*** (0.0634)	-0.807*** (0.0875)		-0.655*** (0.0714)	-0.759*** (0.101)
HighEd		3.258*** (0.546)	2.461** (0.972)		3.219*** (0.587)	2.285** (1.014)
Unemp		-0.837* (0.419)	-0.336 (0.690)		-0.594 (0.435)	-0.320 (0.685)
POPDENS		-0.000986* (0.000502)	-0.000173 (0.000564)		-0.00105* (0.000519)	-0.000421 (0.000622)
Share1524		-6.333*** (1.030)	-0.175 (2.160)		-6.354*** (0.908)	-0.772 (2.346)
Share6574		1.216* (0.646)	1.131 (1.373)		0.652 (0.641)	0.0569 (1.257)
Mun. Minority				0.0329 (0.0290)	0.0546*** (0.0179)	0.0410** (0.0194)
Mun. Mixed Gov				0.0151 (0.0549)	0.0716** (0.0337)	0.0553* (0.0314)
Mun. Min*Mun. Mix				-0.0648 (0.0974)	-0.130 (0.0854)	-0.101 (0.0654)
Cons.	0.0940*** (0.00543)	4.091*** (0.337)	4.032*** (0.488)	0.0768*** (0.0123)	4.094*** (0.373)	3.976*** (0.512)
Controls	No	Yes	Yes	No	Yes	Yes
Time Fixed Effects	No	No	Yes	No	No	Yes
<i>N</i>	126	126	126	126	126	126
adj. <i>R</i> ²	0.012	0.673	0.727	-0.017	0.692	0.734
F	47.46	140.1	123.9	0.492	89.36	89.01

Note: Robust standard errors are reported in parentheses and significance is denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.2 List of variable definitions

- **Growth:** The growth rate in GRP over the four-year period that coincides with the election period.
- **Reg. Minority:** Dummy variable. Equal to 1 if the region is ruled by a minority government and 0 otherwise.
- **Reg. Mixed Gov:** Dummy variable. Equal to 1 if the region is ruled by a mixed government and 0 otherwise.
- **Reg. Parties:** The number of parties ruling the regional government.
- **Reg. Single-party majority:** Dummy variable. Equal to 1 if the region was ruled by a single-party majority, and 0 otherwise.
- **Reg. New Rule:** Dummy variable. Equal to 1 if there is a change in the ruling government, and 0 otherwise.
- **Mun. Minority:** The population-weighted share of municipalities within a region ruled by a minority government. A share between 0 and 1.
- **Mun. Mixed Gov:** The population-weighted share of municipalities within a region ruled by a mixed government. A share between 0 and 1.
- **Mun. Parties:** The population-weighted share of the number of parties ruling the municipal government within the region.
- **Mun. New Rule:** The population-weighted share of the number of municipalities within the region that is ruled by a new government. Share between 0 and 1.
- **Mun. Single-party majority:** The population-weighted share of the number of municipalities within the region that is ruled by a single-party majority. Share between 0 and 1.
- **GRP:** The natural logarithm of the inflation adjusted gross regional product per worker
- **Unemp:** The unemployment rate in the region. Share between 0 and 1.

- **POPDENS:** Population density, measured as the number of residents per square kilometer in the region.
- **HighEd:** The share of people within the region with a university degree.
- **Share1524:** The share of people of age 15-24.
- **Share6574:** The share of people of age 65-74.
- **HDI:** The natural logarithm of average household disposable income within the region.
- **HDI-Growth:** The growth rate in HDI over the four-year period that coincides with the election period.