*With thanks to all the municipal bureaucrats who helped me collect the data used, and special thanks to those who looked in archives, manually asked people and in other ways went beyond to give me the best service imaginable.*

**Abstract:**

This article tries to fill a gap in research on local politics by taking a first look on how public officials in municipal boards behave when in minority rule, as compared to [[1]](#footnote-2)in majority rule. Theory would predict that minority ruled boards would have more chairman decisions than in majority boards, since the ruling chairman cannot as easily push politics through the board. Using several forms of panel data regression applied on a completely unique and newly collected dataset on how many decisions the chairmen has taken in each board, with data from more than half of Swedish municipalities stretching from 2002 to 2019, it finds no statistically significant difference in the number of decisions taken in minority ruled municipalities compared to majority ruled ones. This could either mean that politicians find other ways to get their agenda through while in a minority, or that there are other institutional constraints in place, making the system work well even in a minority.

**Keywords:** *local politics, Sweden, political behaviour, public administration, electoral minority rule*

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# The effects of parliamentary minorities on local level

## Introduction

There is a lot of research done on a national level in general in political science. Sadly, the same cannot be said for sub-national or local level. In Sweden, municipalities together with regions stands for over 20 % of Swedish public expenses as part of GDP (Regeringskansliet, 2015b), yet many of the details in municipal governance is unknown. In the area of municipal boards, where most active politicians in Sweden are, almost no research has been done at all.

At the same time, municipal politics have changed during the past 20 years, not the least by the entry of the Sweden Democrats into the political arena and the subsequent growth of minority rule. While minority rule is not uncommon in Swedish national politics, it is in fact rather the rule (Möller, 2012, p. 53). On the local level however, it has been unusual, and the parliamentary agreed upon systems in place on the national level, such as how budgets are approved even in minority, to ensure good governance despite minority rule might not exist to the same extent or at all on the local level.

Nevertheless, in 2019 more than a third of Swedish municipalities have minority rule (SKR, 2020), as can be visualised in Figure 1 and tabulated in Table 1. Staying at relatively same level between 2002 and 2010, at 2014 it took a sharp jump upwards in number of minorities.

Figure 1 - Majorities in Sweden

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Table 1 - Type of rule after election years

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Majority** | **Minority** | **Share of 290 municipalities** |
| 2002 | 247 | 37 | 12.8 % |
| 2006 | 238 | 37 | 12.8% |
| 2010 | 231 | 51 | 17.6 % |
| 2014 | 177 | 89 | 30.7 % |
| 2018 | 174 | 116 | 40 % |
|  |  |  |  |

In Swedish municipalities, much of the politics is handled in so called boards, where the rule is that decisions are taken collectively (SKR, 2019). There is, however, the ability to delegate some decision-making power to the chairman of these boards in so called chairman decisions (Riksdagsförvaltningen, 2017). We also know from previous research that politicians will use available resources to push through their agenda (ie, Berry & Fowler, 2016; Carmines & Fowler, 2017; CNN, 2017; Peters et al., 2011). From this I hypothesise that in minority ruled municipalities, the number of chairman decisions will increase as compared to majority ruled ones. In a setting where there is no established consensus how these decisions should work in a minority setting, an increase in chairman decisions could on one hand be seen as a democratic deficit as it moves power away from the board, and on the other hand be the result of necessary action for functioning minority rule.

Understanding how this works has a scientific value in explaining minority rule where a null result is important due to it being unexpected and differences in minority rule need to be further researched if that is the case. It also has a societal value, as an understudied and not well understood subject with importance for how our democracy works. Do we want chairman decisions to be used in this way? This is a question for political debate, but a clearer understanding on how this works is an important contribution for this debate.

In this thesis, I will use panel data regression and System GMM on use a unique dataset on chairman decisions in Swedish municipalities from 2002 to 2019 to test the hypothesis that there is a higher amount of chairman decisions in municipalities ruled by minorities than in municipalities ruled by majorities. I find no evidence that this is the case in Sweden, meaning that politicians either have other ways of getting agenda through in minority rule, or that there are good institutional restraints that prevent the misuse of chairman decisions. This contributes to a better understanding on how minorities work on a local level, how municipal boards operate, and how politicians use available power in a municipal setting.

## Background

### Party Setting

Since the early 2000, the political landscape has shifted in much of Europe. Right-wing parties are on the rise with for example AfD in Germany, and populist parties challenge old party structures in many countries. Among these countries are Sweden, where new parties are not a new thing, with the Green Party (MP) entering the parliament in 1988, just to lose all their seats again in 1991, and get replaced by the Christian Democrats (KD) and the populist New Democracy (NyD) (SCB, 2015).

NyD lost their seats in 1994, and the party spectrum stabilised with 7 parties: The left wing Left Party (V), the social democratic Social Democrats (S), the Green Party (MP), the agrarian-liberal Centre Party (C), the social-liberal Peoples Party (FP) who later changed their name to the Liberals (L), the liberal-conservative Moderates (M) and the conservative Christian Democrats (KD) (SCB, 2015).

In 2010, a new party entered the national parliament, the right-wing populist Sweden Democrats (SD) (SCB, 2015), which has generated Sweden to have an instable minority government ever since, having trouble establishing a budget, fighting over the speaker posts, and loosing several important votes in the early days (Ekström von Essen, 2012).

Lately, a broad left-centre coalition has formed, often called “Januaripartierna”, meaning “the January parties”, after the agreement that was formed in January 2019 (Wedin, 2019). Even though Sweden is used to technically minority governments, they previously usually have the support of the parliament, or at least no unified opposition, which has made the previous minority government quite stable. Since 1946, Sweden has only had a majority government for 16 of these years, and 4 of these during the 21st century (Lindvall et al., 2017, pp. 78–79). This is a fairly known subject, see for example Bergman (1993), and the national politics of Sweden is broadly studied.

The same however, cannot be said for the municipal level. Since 2002, The Sweden Democrats have gone from being represented in 29 Swedish municipalities out of 290 in 2002 (SCB, 2019), to 288 out of 290 in 2018 (Valmyndigheten, 2018b), as seen in Figure 2. This makes them the second most represented party in Swedish municipalities, just below the Social Democrats. Due to the growth of the Sweden Democrats, and their isolation in Swedish politics (Christodoulou, 2014), the number of minority municipal councils have grown from 37 in 2002 (SCB, 2020a), to 116 in 2018 (SKR, 2020), as it has not been possible to create coalitions across the political spectrum, and parties preferring to rule in minority instead of allying with a political opponent. More than a third of Swedish municipalities are now ruled by minorities.

Figure 2 – Sweden Democrats representation

Number of municipalities the Sweden Democrats are represented in out of 290. Dates are election dates for all general elections in Sweden in the 21st century. Source: SCB

A screenshot of a cell phone

Description automatically generated

### The chairman decisions

In Sweden, municipalities have their own council, *Kommunfullmäktige*, which then elects members of boards, *nämnder*, which function a bit like parliamentary committees mixed with governments (Regeringskansliet, 2015a). They both prepare decisions to be made by the council, but also have some power to take decisions of their own, and most of the time they are also in part responsible for parts of the municipal bureaucracy. For instance, the Traffic Board, *Trafiknämnden*, in Gothenburg are responsible for politics surrounding traffic, such as road and other infrastructure. Under them are the traffic office, *Trafikkontoret*, which is a municipal bureaucracy responsible for carrying out both the policies set by the Traffic Board and the municipal council (Gothenburg Municipality, 2020).

In these boards, a chairman is chosen by the municipal council, in most cases belonging to one of the parties of the ruling coalition, although there are exceptions, such as the chairman in the auditing board is usually but not always a member of the opposition. These boards act as a collective body, and while dissenting opinions are very common, a decision is formally made by the board in its entirety, not just the ruling coalition. This unusual arrangement where a ruling coalition holds power, but everyone is still part of ruling, has sometimes been called “quasi-parliamentarianism” (Karlsson & Gilljam, 2012, p. 108).

While the number of boards differ between municipalities, a few are required by law, such as the executive board, *Kommunstyrelsen,* which consists of members from the municipal council and has the executive authority. While the chairman of the council is technically the mayor of the municipality, more power resides with the chairman of the executive board, *Kommunstyrelsens Ordförande (KSO),* who is the leader of the ruling coalition (SKR, 2019). In many cases, the members of the executive board also have a chairmanship in another board, being the vice chairman if they are not part of the ruling coalition.

All the boards have the ability to delegate decisions to the chairman in cases where they need to be taken before the next board meeting. These are called Chairman decisions in urgent matters, and are for me an example of direct use of power. While limited in scope, the Chairman decisions are among the few things the chairman can do on his own, without the rest to the board. The board decisions is usually taken as a collective decision in boards - the chairman decision being an unusual exemption. Since being taken singlehandedly by the chairman, being part of the ruling coalition, it demonstrates a direct use of power. This means that a chairman can decide to use this power to push some agenda through, without the rest of the board being informed until after the decision has already been made. This is also means that this changes after elections, since the power dynamics within a board change. The same chairman can in one period have a majority, while in the next a minority. We as such have a good example of a political factor that changes quickly after an election and is such useful for the study of how minority rule affect politics in local settings.

## Previous research

### Municipal Boards

In general, previous research on municipalities are scarce, and previous research on municipal boards are close to non-existent. Karlsson et al. (2009) looking at municipal reforms removing some types of boards found that the reforms can both lead to better and more streamlined decision taking, as well as increased power to fewer people.

Karlsson & Gilljam (2012) looking at parties with the ability to tip the scale of majorities in Swedish municipalities, which is highly relevant to this thesis. They concluded a few things, among other that people at the time believed that scale tipping-parties were far more common than they actually were, and that most municipalities did not in fact have it. However, this article was written in a time when minorities in municipalities were very uncommon, and the Sweden Democrats were still very marginalised in most municipalities, just having beaten KD (Christian Democrats) and now longer being the smallest party in total number of seats, as seen in Figure 3. The focus also lay on the municipal council, not the boards.

Lastly, and most recently, a blog post made by Erlingsson & Sundell (2013) looked at who has the power in Gothenburg municipal companies and boards. They concluded that much of the power is in fact collected to the more well-known municipal politicians, such as those who are also members of the executive board. They admit however, to not taking chairmanship of municipal boards into account, which is something no-one else has done.

A search on Google scholar for “Ordförandebeslut”, the Swedish word for chairman decision, gives no results, as does the English equivalent. In personal communication with two of the authors of the above-mentioned articles, Karlsson and Erlingsson, they both point to a severe research gap regarding municipal boards and its chairs.

From this, it is notable that the area is very understudied, and as Erlingsson & Sundell (2013) shows boards still is a place where politicians act as political actors.

Figure 3 – Total municipal seats

Seats as a summary of all seats won for each year. If a party get 5 seats in one municipality, and 10 in another, they summarise to 15. This is done for each of the 290 municipalities and year. Source: SCB and Valmyndigheten

![A close up of a map

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### Minority rule

When a majority is unable to form, party is able to either make or break a proposal that makes it to the parliament for a vote. As such the research that has previously been done on scale tipping-parties in Sweden on the national level is useful to look at. Since the entry of the Sweden Democrats in the Swedish parliament, the first Reinfeldt government moved from being a majority government, to a minority government. In many ways, the continued acting as if they were in a majority, which garnered critique from many people (Möller, 2012, p. 51), exemplified by a debate article in a major Swedish newspaper by Olof Ruin (2011).

Others, such as Field (2009) analyses minority government in Spain, and find that while majority government are better at getting laws passed in the parliament, minority government still functions quite well, and that Spanish governance is set up with a government bias that makes the executive function even in minority. One of the things the minority government seems to lean on more than majority government, is executive decrees, which is transferable to chairman decisions.

Under a different system than a purely proportional such as in the Scandinavian countries or Spain, the stability of the minority seems to be worse. For instance, in Canada, using the first past the post-system, minority government only stay in power in average for two years, and the government is far more unsuccessful in getting policy through the parliament than in proportional system minorities (Cody, 2008). The instability seems to be a little less pronounced in devolved Westminster systems, as in the case of Scotland. Here, the minority government acted as if it were a majority and got most of its agenda through the Scottish parliament. However, in the Scottish case it seems like this brought with more conflict within the ruling party, as it still needed to compromise more (Cairney, 2011).

This can be connected to Christiansen & Damgaard’s (2008) comparative study of the three Scandinavian countries. They argue that Scandinavian minorities are more stable than others, and that a growth for parties that are not in government, but not really opposition either. They support the government in some cases, and at least do not unite with other opposition parties in most issues. Examples for this can be seen in the early 2000 in Sweden were the Green Party and the Left Party both supported a social democratic minority government, but were not in the government themselves (Knutsson et al., 2019). Christiansen & Damgaard point to this as a flexible strength of the Scandinavian system. An important question though is whether this exist on the municipal level as well.

An example from state-level in Germany would point to that while minority government make fewer pledges, they seem to have an equal fulfilment of those pledges even when in minority (Matthieß, 2019). This however is only a single state, North Rhine-Westphalia, and while a longer period was studied, it cannot be excluded that North Rhine-Westphalia is an outlier and not representative for all German states.

In summary, while minority ruled coalitions seem to be less stable than a majority ruled coalition, they still can function and get their agenda through. As evidence from Spain (Field, 2009) shows, one of the things that help minority rule to govern, is executive decisions.

### Mayors

Due to the unique nature of Swedish municipal boards, international comparisons on local level can only do so much, and even then, most research focus on mayoral positions. However, some interesting research can still be found and may be of use. For instance, Koprić et al. (2018) found that when investigating the role perception of mayors in Europe, mayors were focused on *“local development, implementation of the political platforms of their parties, and the delivery of administrative and social services.”* (Koprić et al., 2018, p. 165)*.* This is not unreasonable to transplant over to chairmen, while in a different setting and different role, the perception of that role and its focus could be the same.

Another chapter in the same book notes that directly elected mayors show less support for representative democracy, but in countries with high trust in political parties, support for representative democracy is high anyway (Vetter et al., 2018). Since Sweden is among the more trusting countries in Europe, scoring high in all of European Social Surveys variables on trust (European Social Survey, 2020), its again not unreasonable to believe that chairmen actually support representative democracy, especially since all board chairmen are indirectly chosen by the municipal council but still being a part of the majority elected by the people. This leads to some interesting tension. If a chairman is focused on implementing their party’s political platform, and support representative democracy, how do they act if they govern in a minority position? The majority may not be against them, but are not with them, so the platform for which they are chose to implement may not be their own.

### Executive decisions

While international comparisons on local level may only do so much, there is another type of comparison we can do. If we see the chairman decisions as a type of executive decision, we have some very relevant research, such as Carmine & Fowler (2017) who analyses American presidential executive decisions and notices that during Obamas last six years, he made more executive decisions than before, and that this correlates with Obama lacking support in Congress. In his first two years, he had this support, and as such also took more of his politics into Congress. This can directly be translated to chairmen taking more decisions when they have a majority. However, Carmine & Fowlers conclusions have been challenged by the election of Donald Trump as President, since he made more executive decisions during his first year as a president since Eisenhower (CNN, 2017), while at the same time having a majority in Congress. Still, this is an interesting conclusion, and it is easy to argue that Trump is an outlier and not how most politicians use this power.

Continuing on the same subject, Lee (2015) supplies a good overview on how polarization affects governance in the American context, consistent with Field (2009). Particular to note is that Lee also points to that governance is not only making new policy, but a large part is just making the routines work. Lee notes that the research on polarisation concludes that when parties polarise, they get stronger party identities, and as such act more in party lines. This leads to a centralisation of power. In a Swedish context, this is nothing new, as Swedish parties are very centralised and most party representatives find it more important to represent the party opinion rather than their own opinion, though the Green Party and the Christian Democrats have at least previously been very individualistic in a Swedish context (Wängnerud, 2012).

Going back to a Sweden, the national government gives appropriation directions, *regleringsbrev,* that govern the goals, spending and direction for each of Sweden’s circa 250 authorities. Erlandsson (2014) compares the qualitative difference in language in the appropriation directions for ten different authorities for 2003 and 2012/13 and among the general points he concludes that the number of goals and things to report back to the government have decreased, and the difference between each letter of direction have grown larger. Erlandsson sees this as signs of a larger shift in Swedish style of governance, with more emphasis on broad goals and its achievement, and less on detail.

Another type of executive decision is when politicians appoint bureaucrats and other people to positions. In some cases, such as some positions in the United States, this require the confirmation from another political body, such as the Congress, but in other cases the politician has the full power of appointment. In the case of German federal appointment, evidence is found that politicians will choose people that fit them and their goals, with statistical significance found for partisanship as well as earlier experience with similar jobs (Bach & Veit, 2018). This is in line with previous findings, such as Peters et al. (2011) and Peters & Pierre (2004) who supply a good overview. This is for me an example of how politicians will use available power to get their agenda through.

Dahlström & Holmgren (Forthcoming) provide another excellent example of this use of power and show how president affect federal funding by appointment in the bureaucracy, by choosing people with the same type of ideology and partisan loyalties. An interesting counter can be found in Berry & Fowler (2016) who looks at congressional committees, at least in part related to municipal boards, and how they affect funding, similar to Dahlström & Holmgren. They however find that in these positions, not all seem to affect funding, only some key positions in the appropriations committees have this affect.

In summary, we see that executive decisions are used to get agenda through, and evidence from the United States indicate that it seems to increase in minorities. This type of executive decisions takes many forms, including appointment and presidential decrees, but the goal is to use available power to make political agenda into reality.

### Municipalities in general

There are also other relevant neighbouring research on municipalities, such as Broms et al. (2019), who study the impact of political competition on public procurement, using the number of open bidders for different procurement projects as an indicator for risk of corruption. One of their findings is that the longer parties’ rule, the more single bidders a municipality have. This is highly relevant for this paper and will as such be modelled.

Erlingsson (2017) has also looked at how inhabitants perceive their municipalities, and see that on average, there is always a lower satisfaction for politics on the municipal level than on the national level in Sweden. Erlingsson (2017) points to one potential reason for this being that municipal level politicians handle more issues that citizens directly meet, such as schools and elder care. To note though, is that while lower than national level, the net balance is still positive in citizen satisfaction.

### Summary

From this we can establish a few points. First, municipalities are an understudied part of politics, where politicians still act as political actors with agendas (ie. Erlingsson & Sundell, 2013). Second, they will use their power to get make this agenda reality (Bach & Veit, 2018; Carmines & Fowler, 2017; Peters et al., 2011). This power takes several different forms, one of which could be chairman decisions, as it is quite similar to other type of executive decisions. But there is very little research on how these executive decisions work in a local Swedish context, where a lot of politicians’ act, where it directly involves many inhabitants and where a substantial portion of public spending is decided. Secondly, the dramatic rise in minority rule can theoretically be seen to affect the use of chairman decisions, as seen in examples from United States and other places.

## Research questions

This leaves a large research gap with room for many questions. First of all, the boards have been severely under-researched, and municipalities together with regions stands for over 20 % of Swedish public expenses as part of GDP (Regeringskansliet, 2015b). Boards are an integral part of municipal governance and should be treated as such. Gothenburg have 31 boards, with around 300 board members in total (Gothenburg Municipality, n.d.). This can be compared to the 81 members of the municipal council in Gothenburg, and even though there is a big overlap in people who both have a position in the municipal council and are members of a board, not all are, meaning that a lot of local politicians have been under researched. Being so close to citizens, municipal politics often have a greater direct impact on people lives who walk the streets, attend the schools, and rely on the elder care, all managed by the municipal politicians in Sweden.

Among these politicians, the chairmen hold a special position, since they have the only ability to exercise power outside of the collective, using their chairman decisions. This is not necessarily a bad thing, it is after all an approved form of exercise of power, but combined with the rise of minority ruled municipalities, it leads to the first research question, with several sub-questions:

* *Is there a difference between chairman decisions between majority and minority ruled municipalities?* 
  + *If there is a difference, what is it?*

## Hypothesis

Drawing on previous research from a multitude of areas, I theorise that when municipal board chairmen govern in a minority position, the number of chairman decisions increase. I build this on several previous findings, among them the government bias as discovered by Field (2009) in Spain, the flexibility of the Scandinavian system as pointed out by Christiansen & Damgaard (2008) and the discovery of the increase in presidential executive actions by Carmine & Fowler (2017). From this we can build the following hypothesis:

*H1: There is a higher number of chairman decisions in minority ruled municipalities.*

This hypothesis is based on the idea of that when a party is in a majority, they need to use other available means of power to get their agenda through.

## Data

### Data Collection

Sweden has an immensely strong access to public information, where every document is available for the public, unless specifically put under secrecy, which may only happen in rare cases. The public may also ask for summaries of public data, as long as it fits within the public authorities’ routine work.

Using this I emailed all 290 municipalities and asked for a summary of all chairman decisions made by the chairman of the board in all municipal boards between 2002 and 2019. 165 municipalities were able to give me information for at least some years, 81 municipalities thought it to either be impossible to find, or not routine to find it, most often because of the time involved. 44 municipalities did not respond within time for me to process the information, though this data is saved for future research.

Of the 165 municipalities who did give me data, most responded by giving me data for each board, and 72 were able to give me data for the entire period of 2002-2019. All these municipalities are put into a first dataset, called the *Primary* dataset.

A second dataset is made with imputed data, called the *Imputed* dataset. 24 municipalities had missing data for under 20 %. In the cases where the missing values were consistently missing for some years, regardless if they replied by a summary of the municipality or for each board, they were discarded. The remaining cases had their missing data imputed by the within-group mean for that year. For instance, the municipality of Eskilstuna in Södermanland gave me data for each board, but in one of the boards they were missing data from 2002-2010, which was available in all other boards. Instead of discarding a case with only 5.88 % missing data, the missing values were imputed using the mean for each year that the other boards from Eskilstuna provided, a simple but effective way of imputation (Little & Rubin, 2020). For ease of understanding, this is visualised in Figure 4. This method left 97 cases.

Figure 4 – Impute method

How missing values were imputed using the within group year-mean.

A screenshot of a cell phone

Description automatically generated

For robustness sake, all models will be tested first using the first dataset, and then the imputed dataset, and lastly with a more strictly defined dataset, called the *Strict* dataset. This strict dataset will only use cases where municipalities provided all years themselves, and nothing was imputed. In essence, this trades less bias in cases with a higher confidence that the numbers are correct. All datasets are summarised in Table 2.

Table 2 – Datasets

Table of datasets used, with summaries on how they work and contain

|  |  |  |  |
| --- | --- | --- | --- |
| **Dataset:** | **Primary** | **Imputed** | **Strict** |
| *Cases:* | Most | Middle | Fewest |
| *Imputed:* | Nothing | Yes, if < 20 % missing values | Nothing |
| *Balanced:* | No | Yes | Yes |

### Trust in the collected data?

Since this is a newly gathered dataset, it has a few things to note. First and foremost, since not all municipalities were able to provide me with the data needed, there could be a bias. Maybe municipalities that responded have systematically higher or lower number of chairman decisions. When summarising how many municipalities within each region who responded, we can see that there is quite a bit of variance in the response rate in the Primary dataset, as seen in Table 7. Here, Sweden represent how many municipalities exists within each region, and Primary Sample is how were able to give me data. Th. ranges from 37.5 % in Jämtlands Län, a region in the upper middle of Sweden, to 100 % with Gotland, a single island municipality in the Baltic sea who also acts as a region, and 87.5 % in Kronoberg Län, an inland region in southern Sweden.

Second, since this is self-reported, I have to trust the municipalities gave me the correct numbers. I am confident that everyone tried to give me the best numbers possible, but several municipalities did so with the reservation that while this was what they found, it is possible that they missed something.

Relying on the municipalities also brings the problem of a possibility that they interpreted the question differently, and so provided me with different data. This is a grave issue, and I suspect it has happened in some instances. For instance, Gothenburg Municipality have individual boroughs responsible for schools, social service, and other very local issues. Angered Borough is one of the largest social services in Sweden (Grip, 2019) yet gave an exceptionally low response in number of chairman decisions, below 20 for each year. Västra Hisingen Borough is another large in Gothenburg, and they count their chairman decisions in the thousands. Had they interpreted the question the same way, they might be different, but not in the high degree they are right now.

While this may be problems, it only means that the data is not perfect, and further research should try to improve it. It does not mean that I consider the data useless or any of the sort. Far from it, I have a great deal of confidence in the responses and believe that most have responded in the same way and with the best available data.

### Data Summaries

Besides this collected data, more data has been added. First and foremost, data on majorities have been added with data from SKR (2020), an organisation for all Swedish municipalities and regions. While their data post 2018 contain information about majorities, their data before that does not. I have as such used official election data (SCB, 2019; Valmyndigheten, 2006a, 2006b, 2010a, 2010b, 2014a, 2014b, 2018b, 2018a) to match this with each municipality-year. If the sum of mandates for the ruling coalition according to SKR was above 50 %, the tag *majority* was added to a new variable. If it was below 50 % and no local parties were in the coalition, the tag *minority* was added. For all the rest, I manually checked whether it was a majority. A summary of how the share of majorities has changed in the dataset is visualised in Figure 5.

Figure 5 – Majorities

Displaying the share of majorities and minorities within the Primary dataset. This differs from Figure 1, which used the entirety of Sweden.

A picture containing computer, door

Description automatically generated

Since I already had the election and coalition data, this was kept in the dataset, as well as added some new data, resulting with the following variables:

* Vote share for the Social Democrats, the Sweden Democrats, and the Moderates, coded as a number between 100.00 and 0.00 to represent percentages.
* Rule Length, for the Social Democrats and the Moderates. Starting from 2002, each mandate period where the party were in the ruling coalition, a counter ticks up with one.
* Population data, for each municipality as an integer for each individual living in the municipality (SCB, 2020b) 1 January each year.
* Median Income. The median income is available for all years but 2019, but as to not lose that year the median income from 2018 is reused. Not an optimal solution, but it stops dropping a year.

All numeric variables are summarised in Table 8 in the Appendix. There we can see that the only missing values are in chairman decisions, nDes, with 1869 observations out of 3078 possible. That means that we have values for ~60.7 % of all observations. However, nDes in Table 8, we can see that there seem to be a very large distance between the mean and the max, demonstrating that it is skewed. Since linear regression will be used, nDes will be transformed using the natural logarithm, to make the distribution more normal. The initial distribution can be seen in Figure 6A, while the transformed distribution can be seen in Figure 6B.

Figure 6 - Histogram of Chairman decisions

A close up of a white wall

Description automatically generated

If we scatterplot the bivariate relationship between Chairman Decisions and time, split into two facets on its majority status and using the untransformed data, as seen in Figure 7, we can see that there indeed at least in an increase in chairman decisions in both majorities and minorities, but that the increase seem to be larger in minorities. If this relationship still stands when controlling other factors will be explored later.

Figure 7 - Bivariate Scatterplot

A picture containing white, clock

Description automatically generated

## Modelling

The primary method for hypothesis testing here will be panel data regression using the *plm* R-package’s implementation of panel data regression (Croissant & Millo, 2008).

As the data available on Minorities is available only on a mandate period basis instead of year-basis, all variables are transformed so they are on the same basis, on mandate period level. For the dependent variable, this changes from a Log Chairman Decisions, into a Log Avg. Chairman Decision, as seen in Figure 8B, where 8A is before log transformation. This log is made to better approximate a normal distribution for the dependent variable.

Figure 8 - Average Chairman Decisions

A close up of a computer

Description automatically generated

Since the data follows the same municipalities over time, and the variation within each municipality is quite high, we can assume that any unobserved time-invariant effects are the same and correlated with the independent variables, in other words fixed, within each municipality. As such, the panel modelling will be using a Fixed Effects estimator with heteroscedasticity-consistent standard errors clustered on municipalities. Since the sample size in all datasets, explained further in the next chapter, is quite large, it does not have a great impact on what type of compensation estimator is used, but following Long & Ervin’s (2000) recommendation HC3 will be used as a standard. The most basic of these models, where the dependent variable of natural logarithm of number average Chairman Decisions is predicted by the dependent variable of whether municipal rule is a minority or not and can be formally described as following:

Equation 1 - Model 1

Where *Log Avg Chairman Decision* is the natural logarithmically transformed number of average Chairman Decisions for each mandate period, *i* is each municipality, *t* is each mandate period, is the independent dummy variable of whether or not the municipality is a minority (0 = Majority, 1 = Minority), is the unobserved municipal fixed effects and is the error term. While the theoretically most sound assumption is that the fixed effect is on the municipal level, i.e. that each municipality has their own unobserved fixed effects.

A second model takes other geographical features into consideration, with population and median income, as well as some political factors. This draws inspiration from Broms et al. (2019).

Equation 2 - Model 2

Where we add to model 1 by adding a population variable from official population statistics and a median income from everyone over 20 years of age (SCB, 2020b). To this, a calculation of the length of rule for the two major parties is added, as well as the vote share of the two major parties and the Sweden Democrats. This is to control for how the larges parties behave, as well as a driving factor for increase of minority rule.

## Results

### Primary models

As we can see in Table 3 below, in Model 1, there is a statistically significant association of minorities on Chairman Decisions, with the expected positive sign and as such in this model having an increase in avgerage Chairman Decisions each mandate period when in minority rule. However, this significance disappears when adding the other control variables in Model 2. However, both Model 1 and 2 fails to reject a Wooldridge’s test of serial correlation. To try to treat this, a variation of Model 2 is made, where instead of the whole time period, just the two time periods with the most variance in Minority Rule between them is chosen, namely between 2010 and 2014. This flips the sign of the association minority, but it is still not significant and still fails to reject the test of serial correlation.

An ordinary OLS Regression is seen in column 4, and shows similar result as Model 2, but here all association of Median Income is swapped for population, and the significance for Social Democratic Rule length drops as well.

Since we still had problems with serial correlation, a System GMM panel regression is used to try to treat this. In this model, sample moment conditions is used as an analogy for population moments conditions, and are estimated by cost functions (Arellano & Bond, 1991). A lag of the dependent variable is used as a GMM instrument, and this is used in a two-step estimation to create a regression that works well for smaller T and is very robust to both heteroscedasticity and serial correlation, as proven by Monte-Carlo simulations (Blundell & Bond, 1998). The model is the same as Model 2 but added are a GMM instrument where the natural log of average Chairman Decisions is lagged by 2 to 5 mandate periods.

Table 3 - Regression models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Dependent variable:* | | | | |
|  |  | | | | |
|  | Log, Average Chairman Decisions | | | | |
|  | *Fixed effects* | | | *OLS* | *Sys* |
|  | *Panel linear* | | |  | *GMM* |
|  | (1) | (2) | (3) | (4) | (5) |
|  | | | | | |
| Minority | 0.712\*\*\* | 0.101 | -0.091 | 0.145 | 0.159 |
|  | (0.103) | (0.072) | (0.116) | (0.196) | (0.106) |
|  |  |  |  |  |  |
| Log, population |  | 0.700 | 0.457 | 0.578\*\*\* | 0.072 |
|  |  | (0.986) | (2.326) | (0.148) | (0.108) |
|  |  |  |  |  |  |
| Median income |  | 0.017\*\*\* | 0.022\*\*\* | 0.005 | 0.006\* |
|  |  | (0.002) | (0.006) | (0.004) | (0.003) |
|  |  |  |  |  |  |
| S length of rule |  | 0.027\*\*\* | 0.031 | 0.046 | 0.039\*\* |
|  |  | (0.010) | (0.019) | (0.046) | (0.016) |
|  |  |  |  |  |  |
| M length of rule |  | -0.010 | -0.005 | -0.0002 | -0.002 |
|  |  | (0.014) | (0.017) | (0.040) | (0.020) |
|  |  |  |  |  |  |
| S vote share |  | 0.003 | -0.023 | 0.007 | -0.013 |
|  |  | (0.008) | (0.017) | (0.018) | (0.012) |
|  |  |  |  |  |  |
| M vote share |  | 0.012 | 0.029 | -0.011 | -0.005 |
|  |  | (0.008) | (0.020) | (0.016) | (0.014) |
|  |  |  |  |  |  |
| SD vote share |  | 0.019\* | -0.050 | 0.019 | 0.034\* |
|  |  | (0.011) | (0.031) | (0.020) | (0.018) |
|  |  |  |  |  |  |
| Constant |  |  |  | -4.933\*\*\* |  |
|  |  |  |  | (1.576) |  |
|  |  |  |  |  |  |
|  | | | | | |
| # of Municipalities | 173 | 173 | 173 | 173 | 173 |
| Time Periods | 5 | 5 | 2 | 1 | 5 |
| Observations | 865 | 865 | 346 | 173 | 1221 |
| R2 | 0.075 | 0.520 | 0.292 | 0.218 |  |
| Adjusted R2 | -0.156 | 0.394 | -0.481 | 0.180 |  |
| Wooldridge*(p)* | 0.000 | 0.000 | 0.000 |  |  |
| AR1(*p)* |  |  |  |  | 0.171 |
| AR2(*p)* |  |  |  |  | 0.060 |
| Hansen-Sargan(*p)* |  |  |  |  | 0.000 |
|  | | | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | | | |
|  | Municipality Clustered Standard Error in Parenthesis | | | | |

Here, we still see no significant association of Minority Rule, and the association from Median Income drops to below 0.1 instead of 0.01, and Social Democratic Rule length drops to below 0.05 instead of 0.01, and the impact is at different levels than in Model 2 with Fixed Effects. Autocorrelation tests are rejected both in the first and second step of estimation, though the P-value decreases in the second step and just barely stays above the 0.05 level. However, a Hansen-Sargan Test of Overidentifying Restrictions fails to reject. This tests if there are GMM-assumptions that are valid, and a failure to reject is indicating that there may still be some problems with the model specification.

### Robustness

#### Imputed data

Re-doing the same models but with an imputed dataset as seen in Figure 4, we can get a longer balanced time-series. This is then averaged into mandate periods, and is such very similar to the primary dataset, but with more data accounted for using the best guess for what should have been there.

The results of these models are shown in Table 4, and are somewhat similar to the primary model. There is a significant association on the bivariate relationship, but once controls are accounted for, this significant association disappears and changes sign. Here however, the significant association of the length of social democratic rule disappears in model 2, as does the 0.1 significance for Sweden Democratic Vote Share. Model 3 is the same as model 2, but with only two time periods, and again very similar to the primary models, but this time there is a significant association to the 0.1 level for Sweden Democratic vote share. The first two of the Fixed Effect models fail to reject a Wooldridge’s test for serial correlation, but the third model does.

In the simple OLS model 4 the results are extremely similar, because most data are available for that period and almost nothing was imputed.

Table 4 - Imputed Data Regression Models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Dependent variable:* | | | | |
|  |  | | | | |
|  | Log, Average Chairman Decisions | | | | |
|  | *Fixed effects* | | | *OLS* | *Sys* |
|  | *Panel linear* | | |  | *GMM* |
|  | (1) | (2) | (3) | (4) | (5) |
|  | | | | | |
| Minority | 0.557\*\*\* | 0.098 | -0.173 | -0.043 | 0.168 |
|  | (0.112) | (0.077) | (0.151) | (0.241) | (0.115) |
|  |  |  |  |  |  |
| Log, population |  | 1.525 | 0.680 | 0.888\*\*\* | 0.201\* |
|  |  | (1.310) | (3.250) | (0.139) | (0.109) |
|  |  |  |  |  |  |
| Median income |  | 0.018\*\*\* | 0.027\*\*\* | 0.003 | 0.003 |
|  |  | (0.003) | (0.008) | (0.005) | (0.003) |
|  |  |  |  |  |  |
| S length of rule |  | 0.010 | 0.033 | -0.082 | 0.020 |
|  |  | (0.014) | (0.030) | (0.057) | (0.019) |
|  |  |  |  |  |  |
| M length of rule |  | -0.005 | 0.0002 | -0.070 | -0.018 |
|  |  | (0.019) | (0.022) | (0.061) | (0.038) |
|  |  |  |  |  |  |
| S vote share |  | 0.006 | -0.019 | 0.017 | -0.021\* |
|  |  | (0.009) | (0.021) | (0.021) | (0.012) |
|  |  |  |  |  |  |
| M vote share |  | 0.016 | 0.003 | -0.002 | 0.005 |
|  |  | (0.010) | (0.023) | (0.018) | (0.014) |
|  |  |  |  |  |  |
| SD vote share |  | -0.005 | -0.075\* | 0.020 | 0.034\*\* |
|  |  | (0.014) | (0.044) | (0.026) | (0.016) |
|  |  |  |  |  |  |
| Constant |  |  |  | -7.150\*\*\* |  |
|  |  |  |  | (2.046) |  |
|  |  |  |  |  |  |
|  | | | | | |
| # of Municipalities | 97 | 97 | 173 | 173 | 97 |
| Time Periods | 5 | 5 | 2 | 1 | 5 |
| Observations | 485 | 485 | 346 | 173 | 679 |
| R2 | 0.060 | 0.476 | 0.292 | 0.218 |  |
| Adjusted R2 | -0.176 | 0.332 | -0.481 | 0.180 |  |
| Wooldridge*(p)* | 0.000 | 0.000 | 0.201 |  |  |
| AR1(*p)* |  |  |  |  | 0.238 |
| AR2(*p)* |  |  |  |  | 0.787 |
| Hansen-Sargan(*p)* |  |  |  |  | 0.0003 |
|  | | | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | | | |
|  | Municipality Clustered Standard Error in Parenthesis | | | | |

Lastly, the final System GMM model is a bit different. The 0.1 level significance drops from Median Income, and instead appears at log population. A 0.1 level significance appears at Social Democratic Vote share, but not at the Social Democratic rule length. The Swedish Democratic vote share has a significance level of 0.05 instead of 0.1. The autocorrelation tests both improve, since it starts at a higher level before the transformation, and the transformation improves the level greatly. However, the Hansen-Sargan still fails to reject, even though there is an improvement; from infinitesimally small, to just measurably very small at 0.0003.

#### Strict data

Going on to the strict data, where any municipalities with unusual observations, such as Gothenburg with way too many decisions in some boards as compared to others, and only municipalities who provided data for the entire period will be used. As usual, the dataset is split into mandate periods, and the average chairman decision is used. The results of the 5 models can be seen in Table 5.

The first model stays the same, though the impact decreases. The second model has its sign flipped, though still is not significant. The only significance that is still present is the one for Median income. The third model has a 0.1 level significance for minority and retains the significance for median income and is the only one of the fixed effect models that rejects Wooldridge’s test for serial correlation. Model 4 only finds significance in the intercept and the population.

Lastly, the System GMM model 5 only retains a 0.1 level significance for Median income and drops it for everything else. The first autocorrelation test fails to reject, but after transformation it does reject a test for autocorrelation. The Hansen-Sargan test still fails to reject, though as with the imputed data, it gets slightly better.

Table 5 - Strict Data Regression Models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Dependent variable:* | | | | |
|  |  | | | | |
|  | Log, Average Chairman Decisions | | | | |
|  | *Fixed effects* | | | *OLS* | *Sys* |
|  | *Panel linear* | | |  | *GMM* |
|  | (1) | (2) | (3) | (4) | (5) |
|  | | | | | |
| Minority | 0.312\*\*\* | -0.074 | -0.250\* | -0.159 | -0.053 |
|  | (0.112) | (0.077) | (0.151) | (0.241) | (0.115) |
|  |  |  |  |  |  |
| Log, population |  | 1.990 | 4.642 | 0.761\*\*\* | 0.062 |
|  |  | (1.310) | (3.250) | (0.139) | (0.109) |
|  |  |  |  |  |  |
| Median income |  | 0.015\*\*\* | 0.025\*\*\* | 0.007 | 0.006\* |
|  |  | (0.003) | (0.008) | (0.005) | (0.003) |
|  |  |  |  |  |  |
| S length of rule |  | -0.003 | 0.016 | -0.081 | 0.011 |
|  |  | (0.014) | (0.030) | (0.057) | (0.019) |
|  |  |  |  |  |  |
| M length of rule |  | -0.002 | -0.009 | -0.074 | -0.019 |
|  |  | (0.019) | (0.022) | (0.061) | (0.038) |
|  |  |  |  |  |  |
| S vote share |  | 0.010 | 0.008 | 0.037\* | -0.012 |
|  |  | (0.009) | (0.021) | (0.021) | (0.012) |
|  |  |  |  |  |  |
| M vote share |  | 0.004 | -0.026 | 0.006 | 0.006 |
|  |  | (0.010) | (0.023) | (0.018) | (0.014) |
|  |  |  |  |  |  |
| SD vote share |  | -0.004 | -0.049 | 0.014 | 0.018 |
|  |  | (0.014) | (0.044) | (0.026) | (0.016) |
|  |  |  |  |  |  |
| Constant |  |  |  | -7.732\*\*\* |  |
|  |  |  |  | (2.046) |  |
|  |  |  |  |  |  |
|  | | | | | |
| # of Municipalities | 75 | 75 | 75 | 75 | 75 |
| Time Periods | 5 | 5 | 2 | 1 | 5 |
| Observations | 485 | 485 | 346 | 173 | 173 |
| R2 | 0.024 | 0.459 | 0.278 | 0.353 |  |
| Adjusted R2 | -0.220 | 0.307 | -0.606 | 0.274 |  |
| Wooldridge*(p)* | 0.000 | 0.000 | 0.302 |  |  |
| AR1(*p)* |  |  |  |  | 0.022 |
| AR2(*p)* |  |  |  |  | 0.857 |
| Hansen-Sargan(*p)* |  |  |  |  | 0.009 |
|  | | | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | | | |
|  | Municipality Clustered Standard Error in Parenthesis | | | | |

#### Dummy coded

The last robustness test is using the primary dataset, but modelling the outcome as a dichotomous dummy instead, where 1 is when they had any chairman decisions that mandate period at all, and 0 if they did not. The models are in other cases the same, and the results can be seen in Table 6.

The results are a bit different from previously. Model 1 stays the same, but model 2 instead has a significant to the 0.05 level impact of population, but it is negative. Social Democratic length of rule is again significant, as well as median income. This time however, the Moderates vote share also has a statistically significant association to the 0.1 level.

Model 3 only retains significance for median income, as does the OLS model 4, but only to a 0.1 level. None of the Fixed Effect models reject a Wooldridge’s test for serial correlation.

The System GMM model 5 has a positive and statistically significant association of population to a 0.1 level, and a significance for median income at the 0.01 level. Social Democratic vote share also has a significant impact to the 0.01 level. However, it fails to reject an autocorrelation test both before and after transformation, and still fails to reject the Hansen-Sargan test.

Table 6 - Dummy coded Regression Models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Dependent variable:* | | | | |
|  |  | | | | |
|  | Dummy coded chairman decisions, for whether they had them or not | | | | |
|  | *Fixed effects* | | | *OLS* | *Sys* |
|  | *Panel linear* | | |  | *GMM* |
|  | (1) | (2) | (3) | (4) | (5) |
|  | | | | | |
| Minority | 0.125\*\*\* | 0.011 | 0.037 | 0.028 | -0.005 |
|  | (0.031) | (0.027) | (0.071) | (0.025) | (0.025) |
|  |  |  |  |  |  |
| Log, population |  | -0.905\*\* | -0.660 | -0.017 | 0.026\* |
|  |  | (0.388) | (1.012) | (0.017) | (0.016) |
|  |  |  |  |  |  |
| Median income |  | 0.005\*\*\* | 0.005\*\*\* | 0.001\* | 0.002\*\*\* |
|  |  | (0.001) | (0.002) | (0.0005) | (0.0005) |
|  |  |  |  |  |  |
| S length of rule |  | 0.013\*\* | 0.001 | 0.002 | 0.002 |
|  |  | (0.005) | (0.007) | (0.004) | (0.003) |
|  |  |  |  |  |  |
| M length of rule |  | -0.006 | -0.010 | -0.003 | 0.001 |
|  |  | (0.006) | (0.007) | (0.007) | (0.004) |
|  |  |  |  |  |  |
| S vote share |  | 0.002 | 0.0004 | 0.0002 | 0.006\*\*\* |
|  |  | (0.003) | (0.007) | (0.001) | (0.002) |
|  |  |  |  |  |  |
| M vote share |  | 0.007\* | 0.007 | 0.003 | 0.002 |
|  |  | (0.004) | (0.009) | (0.002) | (0.002) |
|  |  |  |  |  |  |
| SD vote share |  | 0.002 | 0.003 | -0.002 | 0.003 |
|  |  | (0.005) | (0.013) | (0.004) | (0.002) |
|  |  |  |  |  |  |
| Constant |  |  |  | 0.869\*\*\* |  |
|  |  |  |  | (0.184) |  |
|  |  |  |  |  |  |
|  | | | | | |
| # of Municipalities | 173 | 173 | 173 | 173 | 173 |
| Time Periods | 5 | 5 | 2 | 1 | 5 |
| Observations | 865 | 865 | 346 | 173 | 1211 |
| R2 | 0.023 | 0.236 | 0.108 | 0.043 |  |
| Adjusted R2 | -0.222 | 0.035 | -0.864 | -0.004 |  |
| Wooldridge*(p)* | 0.000 | 0.000 | 0.004 |  |  |
| AR1(*p)* |  |  |  |  | 0.002 |
| AR2(*p)* |  |  |  |  | 0.020 |
| Hansen-Sargan(*p)* |  |  |  |  | 0.000 |
|  | | | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | | | |
|  | Municipality Clustered Standard Error in Parenthesis | | | | |

## Summary of results

The robustness tests show us a few things, among them to note: None of the treatments for serial correlation in the Fixed Effect models work very well, except for the difference Model 3, which is able to reject a Woodridge’s test for serial correlation using both the strict and the imputed dataset, but not when using the primary dataset. The same is true for the autocorrelation tests in the System GMM model 5, which only reject the test before transformation in the primary and imputed versions of the data used. And only in the imputed version does it remain rejected after transformation. In the strict dataset autocorrelation is not rejected in the first test but rejected in the second.

We cannot establish a statistically significant relationship between minority and a change in any direction in the use of chairman decisions, but due to the diagnostics errors all regressions I am unwilling to reject the hypothesis completely, though none of the models find any good support for the hypothesis either.

Even if we use the least errors in diagnostics as a measurement for which model is the best, the System GMM using imputed data, it still fails to reject the Hansen-Sargan test, pointing to that there still could be some invalid restrictions in that model. The next best model would be model 3 in either the imputed or strict datasets, both managing to reject the Wooldridge’s test for serial correlation. However, since they are variations of a dataset, I prefer to view them strictly as robustness tests.

Nonetheless, the best conclusion from this analysis is that there is no statistically significant impact from whether or not there is a minority or majority rule in a municipality, on the average amount of chairman decisions taken each mandate period.

## Discussion

### Interpretation

This has a few interpretations. The primary one being that municipal politicians either have strong enough institutional controls such as a strong auditor and insight from the opposition that they do not misuse the chairman decisions for their benefit. This is normatively a good thing, and in a parliamentary system it gives the publicly elected representatives a chance to have input on public policy and if it does not have support among the broader board, it will get stopped. And since municipalities in Sweden seem to enjoy a positive satisfaction with democracy (Erlingsson, 2017), citizen seem to agree that democracy works well.

The second interpretation is that politicians in municipalities simply find other ways to get their agenda through when in minority rule, and that chairman decisions is not one of them. Given that so little of municipal politics is studied, this could very well be the case.

Compared to other countries, in albeit different levels, this is unexpected. From the United States and presidential executive decisions (Carmines & Fowler, 2017; CNN, 2017) this is not what is expected at all. However, it could also be argued that parties behave as if they are in a majority, even though they are in a minority, something which there is examples about on a national level in both Sweden and Scotland (Cairney, 2011; Möller, 2012). This could mean that they just accept more losses in parliamentary votes, something that is not shown in the data used in this essay.

This result was not expected from theory, but if we accept this result, we have learned that there is no association between minority rule and an increase or decrease in chairman decisions. However, while not tested in this essay, there are some results that would merit further investigation. In many of the models, the length of social democratic rule had a positive association with the number of chairman decisions. This should be further investigated and theorised about.

### Improvements for future research

There are several improvements able to be made primarily to the data that was used, which not only improves the data, but also enables the testing of other similar hypotheses, and in turn increasing ability to prove or disprove the theory.

First, collect new data on minorities. In the data used, the data is collected once per mandate period, resulting in no variance within municipalities in this area in the data. In reality though, some municipalities do change majorities between elections, and while not common, it still happens. This not only means that the granularity of the data changes so it can be used in a year basis instead of a mandate period basis, it also means that a within-mandate period change could be used as an example for instable majorities or instable minorities, and test whether that has another association on chairman decisions. A finer granularity would also allow for some parts of the data to be set aside as a test set for testing the robustness in an even better way.

Second, data on the total number of decisions in the board should be collected. Maybe chairman decisions are used the same amount, but the total number of decisions lowers? Having the total number allows for the share of chairman decisions to be calculated, getting another dependent variable for testing of this theory.

Together, these two would provide an excellent improvement of data quality for future research, hopefully remedying the autocorrelation issues found in the collected data used in this essay, and lead to more conclusive evidence on how minority rule affect governance in municipalities. Combine this with further investigation into how different political parties affect chairman decisions, and we will not only understand how municipal minority rule works in Sweden, but understand more about a severely under-researched area that still makes out a large part of political life and governance in lower level of Swedish democracy.

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**Appendix:**

A code-appendix can be found here, containing all code used for this thesis:

<https://github.com/drmuu/Masteruppsats/blob/master/Master_Thesis_code_appendix.Rmd>

Found in the same repository are also all used data.

Table 7 - Regional response rate

Where Region is the geographical unit, Sweden is the number of municipalities that exists in the region, Primary sample is the number of municipalities that responded, and share the share of municipalities that responded. For instance, in Blekinge Län there are 5 municipalities, of which 4 responded. This makes it so that 80 % responded.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | | |
|  | Region | Sweden | Primary Sample | Share |
| 1 | Blekinge län | 5 | 4 | 0.800 |
| 2 | Dalarnas län | 15 | 9 | 0.600 |
| 3 | Gotlands län | 1 | 1 | 1 |
| 4 | Gävleborgs län | 10 | 5 | 0.500 |
| 5 | Hallands län | 6 | 5 | 0.833 |
| 6 | Jämtlands län | 8 | 3 | 0.375 |
| 7 | Jönköpings län | 13 | 9 | 0.692 |
| 8 | Kalmar län | 12 | 8 | 0.667 |
| 9 | Kronobergs län | 8 | 7 | 0.875 |
| 10 | Norrbottens län | 14 | 6 | 0.429 |
| 11 | Skåne län | 33 | 17 | 0.515 |
| 12 | Stockholms län | 26 | 12 | 0.462 |
| 13 | Södermanlands län | 9 | 6 | 0.667 |
| 14 | Uppsala län | 8 | 5 | 0.625 |
| 15 | Värmlands län | 16 | 8 | 0.500 |
| 16 | Västerbottens län | 15 | 7 | 0.467 |
| 17 | Västernorrlands län | 7 | 4 | 0.571 |
| 18 | Västmanlands län | 10 | 7 | 0.700 |
| 19 | Västra Götalands län | 49 | 34 | 0.694 |
| 20 | Örebro län | 12 | 9 | 0.750 |
| 21 | Östergötlands län | 13 | 7 | 0.538 |

Table 8 - Summary statistics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | |
| Statistic | N | Mean | St. Dev. | Min | Pctl(25) | Pctl(75) | Max |
|  | | | | | | | |
| nDes | 3,114 | 19.411 | 66.987 | 0 | 0 | 15 | 1,233 |
| M\_vote\_share | 3,114 | 18.243 | 8.394 | 0 | 12.6 | 22.4 | 53 |
| S\_vote\_share | 3,114 | 35.273 | 8.731 | 6.710 | 29.840 | 40.760 | 60.910 |
| SD\_vote\_share | 3,114 | 5.529 | 5.842 | 0 | 0 | 9.0 | 33 |
| S\_length | 3,114 | 1.924 | 3.014 | 0 | 0 | 3 | 22 |
| M\_length | 3,114 | 1.467 | 2.629 | 0 | 0 | 2 | 22 |
| pop | 3,114 | 33,247.180 | 52,032.420 | 2,489 | 10,445.5 | 36,122.5 | 579,281 |
| median\_income | 3,114 | 230.945 | 37.191 | 154.600 | 202.200 | 254.150 | 395.000 |
|  |  |  |  |  |  |  |  |

1. [↑](#footnote-ref-2)