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– Do more public agencies bump up the local tax revenues?

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Abstract

In this thesis the subject has been to investigate if there is any connection between government agency presence and tax revenue in the municipality. Previous studies in Sweden have more focused at the intergovernmental relation between state and local level and especially they have focused on government grants and the effects. But this thesis recognizes that the government can also shift the distribution of the public agencies in there allocation as a benefit for the local area. According to theory it seems that people with same profession and producers of one good or service want to be allocated near to each other, a combination of agglomeration, scale effects and cluster effect which will stimulate growth. With an investigation on how the distribution on how the public agency are located combined with register data over what people work with, it seems that there is some small public agencies clusters namely the county capitals. Further, as method to check if there is any connection between governmental presences and tax revenues a regression analysis have been conducted. The used sample is aggregated panel data of 290 Swedish municipalities over ten years. Results are mixed and there is no robust result that is supporting the hypothesis that more people work in a public agency will bump up the tax revenue. There is an indication that increased ratio with people who work in public administration or in military forces will bump up the tax revenue. The result is regardless if the measure is on the ratio how many works in the municipality or how many work in that sector and lives in the municipality. But when to look in general of people working in a government agency there is no significant result regardless of measure. Thereby, the overall conclusion is the result is mixed and the hypothesis is not confirmed.

Keywords: Panel data, tax revenue, municipalities and government agency.

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1. Introduction

During the autumn of 2014 there were several motions from Swedish parliament members where they wanted to have a more equalized distribution of the Swedish institutions by redistribute the institutions who were stationed in Stockholm to the rest of the country (as example parliament members Johnsson & Åkesson; Swedish parliament 2014). Further, during the spring the Swedish public service dedicated one news week to investigate how the change of governmental institutional jobs had been over time in response to the critique of the Swedish tax authority decided to cut down on local office over the country (SVT: a & b, 2015).

From an international point of view, economic scholars is interested on the effects of bureaucratbut is more focused at corruption and economic growth and small versus big state in efficiency (Del Monte & Papgagni (2001); Jalilian & Weiss 1997). Scholars is also interested in fiscal federalism which means delegating power to lower levels and instead of institutions to look at if there will be more efficient (Sorens, (2014)). In Sweden the state grants to local levels have been treated deeply in Sweden is the intergovernmental relation and especially state grants and the effects for example (see Johansson, 2001).

However, the state can also change how it spends as for example in how they locate the governmental agency. As stated in the beginning there is a concern that today's institutions are unevenly spread in the country but they are paid by all Swedish taxpayers and with respect to the public size in Sweden this issue is worth to investigate (Sweden's governmental spending was at year 2011 51 %; OCED, 2015).

The question is it benefiting to have a local presentation of the state in your own municipality? One obvious is that an increased government presence will increase the quantity of potential jobs and give a higher tax base and thereby they can increase spending.

This thesis will instead look if there are any gains in tax revenues per capita to have an increased governmental institution in the municipality. The reason why is that the main income for regional level is the share of each person wage were the mean is about 32 % (Statistic Sweden, 2015; own calculations). By have more well payed jobs then the higher the municipality will get in tax income per capita. Today a person who is working in a government institution is earning more than a blue collar person (Statistic Sweden, 2015). Thereby there is an incitement for local politicians for lobbying as they see it more governmental institutions localized in the municipality will bump up the tax revenues.

The hypothesis for this thesis is that a larger size of government officials in relation to population leads to a higher tax revenues per capita for the local municipality.

As method this thesis have done a regression analysis with aggregated data over all Swedish municipalities (290 pcs.) over 10 years (2004-2013) and checked if there is any connection between tax income per capita and share of people working in government institutions in the total population in the municipality.

In short, the results show a small positive economic significance that a higher share growth of people works in public administration or in the military forces will bump up the tax revenues. But, there is no significance when altering method to look at from a static perspective and when changing the variable of interest to look at the relation of people who work in a governmental agency no significant result can be found. Thereby the hypothesis cannot be accepted.

The rest of the paper will have this disposition: First, there will be an investigation how the Swedish institutions are distributed today and over time. Second, there will be a discussion on factors that it is connected to public agencies and their effects on the local area in terms of Public, Labour, Economic Growth and New Economic Geography. Third, there will be a presentation on what previous scholars have done in this field in intergovernmental relation with more. Fourth, there will be a discussion on the method which is a regression analysis. Furthermore, the estimated model will be presented a long with the data with a short interpretation. Fifth, the results of the regression analysis will be presented with interpretation. Finally, the last section will contain a short summary with conclusions and suggestions for further research.

2. Background

To start there will be a short summary of the political and administrative functions in order to explain the section to come about the Swedish institution distribution. There are three political levels in Sweden state, county and municipality level. Both the county and municipality level were created as a complement to the church institutions at year 1848 and have always been focused to give welfare service to the inhabitants. For the county it is mainly health care and there are today 21 counties. The municipality duties are many but one of the largest is common schooling and elderly care and toady there are 290 municipalities. For the state level most is allocated in the capital, Stockholm. But the state is also presented at local level with the county administration board. Theirs duty is to perform what the parliament and the state wants it to do at local level which can be for example coordinate grants for regional growth and also they coordinated with the governmental institutions allocated in the county. This system with county administration has existed since 1635 and the place where it is allocated became the county capital which is also often the county capital for the local political at counties. (County Administration Board, 2015; Västernorrland County Administration Board, 2015 & Asker, 2002).

How then is the distribution of Swedish public agencies? To answer that question I have looked at Statistic Sweden Public Agency Register that register all Swedish public institutions since 2008 under the enactment of SFS 2007:55 (in Statistic Sweden, 2007). The register is divided under several categories but the register that is interesting for this investigation is the register of governmental institution. As the name says a governmental institution is an institution under the government and get there appropriation from the government for each period.

If we look how the governmental institution is distributed today (year 2015) then Sweden has 244 different government institutions. There is a histogram in appendix in figure (1) that shows the distribution with how many municipalities there are on the y-axis that have X institutions which is on the x-axis which be seen in the appendix (p.41). According to the register 40 municipalities had at least an institution head office and of them 135 were allocated in the capital of Sweden, Stockholm. The county capitals differ also because they have the county administration board that is a governmental institution and thus have at least on agency allocated there.

If only go on the information above then the concern by the Swedish parliament members is confirmed. But notice that the register shows only the headquarters address where people can contact the specific public administration with their concerns and questions. The register does

not say anything about if there is any sub office(s) which is important to have to fully understand how the distribution are in Sweden because it is highly likely that many of the offices have that.

To solve this I visited each institutions web page to try track down if the institution had any sub offices and were they were allocated.[1] I have also here created a histogram in same manner as above that how many municipalities there are on the y-axis that have X institutions on the x-axis which be seen in the appendix in figure (2) on p. (41).

As we can see there is now a much more municipalities that have an institution allocated there when and officially all of them are indeed have at least an institution there. In fact the most common is to have 2 institutions and often it is the Swedish Police and Arbetsförmedlingen who is the national employment office.

When I looked at the different institution and saw their purpose along with the distribution I saw some trends that I want to share. The first it seems that several of the institutions have chosen to be allocated near to an important branch to give services and to control it. This can be explained in part of a cluster effect that the public tends to allocate offices close to a branch to improve it and to control it better (this will be further discussed in the theory section). The second trend is that an institution because of its obligations cannot practically be allocated on one place but have to be spread out over the country. It can be in all or almost every municipality or onto few municipalities to cover one region. But the more common is that they have chosen to be allocated in a county capital and will work together with the county administration board. The final observations are that it seems that some municipalities have many more institutions allocated in relation to similar municipalities. The reason why is because of the shutdowns of military bases that happened during the last decade where as a compensation for lost jobs the government choose to move some institutions to the affected municipality (for more information please see previous study section).

When counting in sub offices Stockholm is still in quantity the municipality that have the most institution so again it seems the Swedish parliament members concerns is confirmed but when I looked at each institution I found some explanations why there is so. The first is because there are some institutions that have to be allocated there because they are fundamental and have to interact with the government or the parliament. The other explanation is that there are several initiations that is really small and is often a committee, a court with more. Many of them have not

[1] The investigation to this part was conducted under a period from April to June in 2015.

even their own administration but are administrated under Kammarkollegiet which is some of its main duty (Kammarkollegiet, 2015).

As stated in the beginning of this chapter the register goes back to 2008 and we can see how the changes of closed and created of governmental institution have been over time. I have created a table that shows how much differences it have been per year and can be seen at table (6) on p. (42) in the appendix.

The table shows no clear trend if there is more/less government institutions over the time period. But with the description for each year it shows that there are several of the institutions that have been reorganized and thus been shut down and arise as a new institution in the register. There have been also some mergers for example the Swedish Police Force. Though, the registry does only go back to 2008 and does not cover the earlier years and also it only covers places where the headquarters were during at that time, not the sub offices. This makes it a problem to not to have official public knowledge of changes in institutions along with their sub offices. As this investigation have showed in a single year it is a large difference in allocation when including sub offices and to only look at headquarters would make a miss wilting result. Furthermore, as described above the institutions can varies a lot in size so to only look at number of institution would not get a reliability result and the institutions effect on the municipality will effect deeply on how big the municipality is.

Therefore, I will in this thesis use register data instead where Statistic Sweden have divided the workers in different classes and have it over different time periods. There are several aspects you can look at it but in this thesis I will look at what they call night and day population. Night population captures workers who officially live in the municipality and work under this profession. Day population captures the number of workers who works in the municipality under this specific branch. This could mean in the latter that may not live there but they work there. I have used two different register for this thesis one register shows specifically all persons who works in a governmental institution from 2004 to 2013. The other looks at persons who work in public administration, military forces and public insurances from 2008 to 2013. The latter one will be used in a sensitivity analysis to see what happens if you exclude person who work in universities and get a more pure public administration/military effect.

3. Theory

Let's go back to introduction on the motion from the parliament members. They did want a more even distribution of governmental institutions over the country. What can then be expected from a theoretical point of view if the Swedish parliament accepted the motion? That will be the foundation in this section. What will be the benefits for the municipality with more government agencies allocated there? In addition there will be also a section that discus why the government agency or other sectors of the economy (especially manufacturing) wants to be allocated close to each other to answer what question that did arise. Finally I will in short discuss other factors that may affect the tax revenue.

3.1 Economic growth

There are two aspects in economic growth that may be affected with an increased government presence and that will be a better infrastructure in municipalities with military presence and there will be more persons who have higher human capital which will stimulate growth (especially municipalities who have higher education placed there).

3.1.1 Military bases and infrastructure

It is common by scholars that have looked into the effects of reallocation and shutdowns of military bases they have expected that these places have a better infrastructure because off tactical reasons. Resources and manpower have to easy move in and out from the area and thereby a higher need for better infrastructure (Payolo et al., 2010). There is also another reason on why there should be better infrastructure in the local area that is stated by Andersson (a) et al (2007) that is connected on the military service system in Sweden. Until 2010 Sweden had a military service system that consist drafted males and females who did it voluntary. They were stationed somewhere around the country to be educated up to one year commonly. These requites had the right to go home for the weekend and thus the government had to arrange for these travels and thereby the state were forced to have a infrastructure level to meet this demand (If the distance were long they could go home by train or fly, otherwise by buss) (Rekryteringsmyndigheten, 2015). This infrastructure could also be used for civil purposes and as Andersson et al (2007) says would help the economic growth in the region.

How relevant is the effect then about right to travel home? In this thesis during the investigated time period the Swedish military forces experienced several cuts on the budget which lead to

several shutdowns of regiments (especially at 2004) so the effect will be weaker over time because of fewer soldiers and sailors will be trained. But the effect will be still valid for the municipalities that were retained and the former effect described of 'need of good infrastructure' is also valid even after the dormant of military service. A final notice, as the Swedish forces it is one of the biggest institutions in Sweden so there effects on the local area will be one the most important factors to see any connection between governmental institutions and tax revenues (Swedish defense forces, 2014).

3.1.1 Human capital and Economic Growth

As mentioned in the beginning of this subsection the other important factor is the human capital level in the municipality. The human capital level will increase because the governmental institutions will require skilled persons. Skilled persons will be more payed and if the effect is enough large it will bump up the tax revenues per capita for the municipality were the skilled persons lives. I will discuss human capital from two perspectives from Labour Economics and in here from Economic Growth (Agihon & Howitt, 2007). According to Economic Growth theory an increased human capital level in area will make it easier to assimilate the technology that exists or to create new technology or improve the products that exist (often called R&D: Research and Development). One of the more popular theory papers that have been made is Lucas (1988) where he discus human capital connecting to technological change and adaption of existing technologies.

So when to look at human capital from an economic growth perspective it is more focus on R&D in perspective to Labour Economics where it is more the person who gains skills and will be more productive. So from economic growth it will be more important with universities and there allocation. If we implement what Andersson (b) et al. (2004) does in their paper of the university decentralization. Then the municipalities with a higher education allocated there will have a higher growth and thus higher tax revenues per capita.

3.2 Perspective of Labour Economics

3.2.1 Expectations with more public institutions

All previous studies that have looked at expansion of a public institutions relies on it will have a positive effect on the local labour market either as Andersson (b) et al. (2004)who says that it will make public investments that will stimulate in growth. Payolo et al. (2010) that sates that with an extra public institution it will increase the consumption level on the area. Because, the institution

needs to buy public procurement it is likely that some of them are bought locally which will increase consumption in the region. Further they state that private companies are needed to serve the institution this is more likely with military regiments but are still a factor. This theory belongs also behind cluster economics that will be discussed more in detail further on in this section.

So this in all confirms to the neoclassical model that says under ceteris paribus in a municipality that will get more public institutions it will increase labour demand which will create a higher employment and a higher wage level or vice versa with a withdrawal of public institutions (Borjas, (2013) p. 4)).

3.2.2 Human capital and Labour Economics

If there is a high positive correlation with human capital and with governmental institutions then it will have positive impact in the municipality. There are many things that are connected to human capital which have positive effects. LeGand et al. (2008, pp. 52-57) divides it in two parts one is a positive externality that is good for the society as whole but is hard to measure. But the one more connected to this thesis is that a person will be more productive and will get a higher wage. Further, as they sates a person must in theory decide on how much education a person wants in relation to future salary and costs in education and the alternative salary to compare it what the person would gain by take a low skilled job, all discounted.

Final consideration on why more governmental institutions should have positive impact for the tax revenues is because of the last decade's trend of increased unequal differences between low and high skill workers. In Author (2014) paper he discus of what has happened in USA in the last decades which is similar to Sweden. What he states is the education premium for another year of schooling has increased much. Further, he states that in theory that wage for a job will increase is that demand for the work must also increase. So it is strange that the education premium have increased because of the increased supply of high educated people. This mean that the demand for educated people must have increased much more as Author concludes. So, for a municipality in it will be much more important have public institutions allocated there in what have been before because of the education premium. Educated people get higher wages which will in turn give more tax revenues.

There are not many theories that scholars discuss on why the wage premium have increased but there is a theory from Agihon & Howitt (2007) that says if relative more people take more skilled jobs there will be a direct and an indirect effect. The direct effect says it will push down the wage level for skilled jobs because of the increased supply of workers. But there is also an indirect

effect that may dominate instead that says because of relative more persons in the skilled sector it will attract investments and capital. So with more investments and capital it will be better products who is worth more and the works will be better paid.

3.3 New Economic Geography

In this sub-section I try to answer from a theoretical point why there is an economic reason why there is a higher concentration on governmental agencies and that they are not even shared over all municipalities. Also I will from a theoretical point of view argument that these concentrations can have a local positive effect on economic growth and thus create higher tax revenues. There are three factors and those are agglomeration, scale effects and a cluster effect.

The first one agglomeration effects just states that production will be more effective if the workers try together to produce a good or a service instead to produced it by themselves. One of the first persons to mention this agglomeration effect was Marshall, (1920) in his book principles of economics when he tries to answer industrial organization (pp. 241-249).

One other important factor is the scale effect factor that is when applying mass production you can get lower cost because of decreased marginal costs in production. One classical paper who layout foundations about scale effects is the paper by Dixit & Stiglitz from 1977. In their paper the layout a model on how the market will behave in respect to marginal costs and fixed costs in respect to resource allocation. In short, there analysis shows that if the commodities that are produced tend to be perfect substitute then the producer will increase their production and there will be a scale effect in production. But if they are not close to is perfect substitute then it will be produced under monopolistic production. They will seek profit maximization with a lower consumer surplus in relation to the former one.

The paper above shows that in general when scale effects turns on but it does not say where they will be allocated under which conditions. Krugman (1991) answer to that question and layouts a model based on two sectors one agricultural sector that does not have any transportation cost and one manufacturing sector which have a special high transportation cost which he calls "Iceberg" transportation costs. Iceberg transportation cost means that not all that you are sending away will arrive in the same number and it will be less the longer the distance is. His conclusions shows that when the transportation costs is high then the manufacturing business will not be concentrated but will be spread. But, when transportation cost is low then they will be concentrated because then they can use scale effects and share costs. Also, there will be pecuniary

externalities in this manufacturing spot which makes that a company cannot move to another area. The reason why they cannot move is because the workers would demand a wage premium to move and thus they cannot compete.

Besides from his model Krugman have three other conclusions that explain why concentration happens in the manufacturing sector which I say can be converted to other sectors of the economy. One reason is that the producer can share nontradable goods and it will be easier to share information, a spillover effect. But also, that the employers and the employees wants it is because they can easier find each other so there will be lower unemployment and easier to maintain production (1991).

The last effect to recognize with is the cluster effect which described by Porter (2000). According to him a cluster can be anything that is producing goods or service and it can be on different level from a small district in a city up to a multinational level. What is recognizable is that they are focused on one sector and companies who produced same or similar are allocated close to each other. He mentions also that the state is often are also allocated in the cluster to support it by for example have an institution that gives service for example controllers or there is a university who supply workers. The cluster attracts also investments from private and public sector to developed and maintain it. According to Porter the reason why the cluster are a place of economic growth is because inside the cluster it allows cooperation but most competition. The cluster forces heavy competition among the producers and to gain market shares it requires high innovation rate and as a mean to survive the other companies will imitate the new innovations. So this explains why clusters tend to be places with high innovations.

In addition to clusters and public agencies (Arundel, Casali & Hollanders, 2015) states that the structure of the public agencies is an important factor in how innovate they are. He states it should be agencies who are bottom up and not top down organizations which he proves with data on a sample of EU-member state and how there agencies are organized.

In this thesis I argue that there are some areas that are functioning as a government agency cluster namely the county capitals because they have relative more institution allocated there and in almost all of them there is a university allocated there which supply workers. If they are indeed a cluster then it is expected that these areas will have a higher economic growth in relation to other municipalities in this perspective. Because of higher growth it will create higher tax revenues. In the data section of the description table I have sorted out the county capitals as one category to compare with the total sample.

3.4 Perspective from Public Economics

As mentioned before the tax revenues that goes to the municipalities are a salary tax and I will in this section discuss short on few aspects that theoretical will affect the tax revenue.

First, is the preference of the politicians. The politicians will set the tax rate based on their preference or their ideology. On common in public economics is to assume (and in this paper) that the bureaucrats and politicians are Leviathan according to Feld (2014). Leviathan means in this context that the bureaucrats and politicians want to maximize their revenues.

Furthermore, in his paper Feld (2014) discusses about Buchanan's ideas that diminish the Leviathan effect the political system must be fiscal federalism where much of the power is transferred to local levels. As I see it the reason above with fiscal federalism can be shown whit a so called neighbor effect when the politicians have to decide the tax rate that Edemark & Ågren have proved in Sweden (2007). The neighbor effect states that the politicians cannot deviate too much from their neighbors in tax rate, if the rate is too high then the politicians will lose tax base.

So in theory the politicians in the municipality have to set the tax rate according to the so called Laffer curve that says that there is a specific rate that will maximize the revenues for the public, if they are Leviathan (Fullerton, 2008).

4. Previous studies

There are several issues that can be connected to this investigation because there are several factors that count in what will affect the tax revenues at local level with a government interaction. But, there are not many papers that have exactly have looked at the effects for government agencies at local level. Thereby, I will present in short what other has examined and will go deeper into the more relevant studies that have been made in Sweden and abroad.

One common thing is to examine if the size of the public sector stimulates growth from a national point of view as Jalilian & Weiss (1997) who used multinational panel data set and founded no negative effects of the public size (can be of course from other point of view).

Another subject is the bureaucrat themselves and their effects on the economy. One perspective that is popular is economic growth connected with corruption among bureaucrats, for example, Del Monte & Papgagni (2001) who found negative effects in Italy. In Sweden Dahlberg & Mörk (2006) have looked at municipality level to see if the bureaucrats who works within the municipality could affect the employment level but they could not find any result. Same authors have found that there is an "election effect" on municipality level in Finland and Sweden. An election effect means that the local politicians will increase employment of public jobs to have a higher chance to win next election (2008). So there are indeed some few studies that interacts factors on local level. But, I have not found any studies that consider the factor of changes in government bureaucrat jobs in general and their effects on the local level where they are allocated. So there is a gap here that can be filled here.

This thesis are also interacting with public economics because of the underlying question is what factors that may affect the income for the public and in this example the tax revenues? Could it also be that the state with their agencies will affect the tax revenues because where they are allocated? There are several papers that have looked at effects of taxation on local level for example Edemark & Ågren (2007) looked in Sweden and Revelli (2001) have looked in UK that instead have property tax instead of a wage tax if there is any "neighbor effects" when setting the tax rate. A neighbor effect means that politicians cannot deviate much in tax rate from your neighbors because of the risk of losing tax base and there by tax revenues. One other example is Dahlberg & Johansson (1998) who have looked at casualization what drives costs and revenues at municipalities in Sweden.

One issue that is a step closer of what it is of interest in this study is to look at fiscal federalism. Fiscal federalism examine the effects of giving political power from state level to local level and several papers have been made. For example Sorens (2014) have looked a tax competition in USA and founded that increased decentralization will reduce the cost of government spending. On multinational level have Kyriacou & Roca-Sagalés (2011) used OCED-data and showed that increased fiscal decentralization will increase government quality. But this can be viewed as a parallel subject because it looks on the effects of altering on the political organization while we are here more interested in how the effects of changing on the administrative side. As what happens locally when we change the administrative structure with the public agencies. They are of course closely related as I have described in the background section but still not the same.

On further closer step is to look at the intergovernmental relationship between the state and local level. In Sweden there are several papers on this subject which is focused on the effects of state grants which is one of the revenues for the local municipality that is received from the state. Previous studies have founded a positive relationship at the probability of applying and transferring grants from/to municipalities that are swing voters and have same political alignment to get more votes (see Johansson, 2003 & Hanes, 2007). There is also paper from abroad as for example Solé-Ollé & Sorribas-Navarro (2007) founded same relationship in Spain that municipalities with same political alignment as in state get higher probability for more grants. On other example about state grants is a paper by Dahlberg et al. (2008) who founded that extra grants to Swedish municipalities did not decrease the local tax rate but it created a fly paper effect in meaning that the extra grant did increase local spending. These papers shows that something that happens on state level can also bring effects on what is happening on local level as for example in trying wining an election on state level. State grants can be viewed as direct effect with governmental relationship and may then the governmental institutions be an indirect effect as they may bring positive effects for the local community? If it is so that there is a positive relationship then there may be interest to see if there is any connection in change of the distribution of public agencies and political alignment at local and state level. But that must be based on there is a connection and there is a reason for politicians to lobbying and that will be the purpose of this thesis to see if the governmental institutions can change so much that it will raise the tax revenues per capita in the municipality.

There are some studies that have looked at local effects of governmental institutions in Sweden one of them are by Andersson (a), Quigley & Whilhemson (2004) have inspected the expansion of higher education in Sweden where they predict agglomeration effects and what can be

described as a cluster effect. In their research they can see that the labour productivity will increase with both more students and researchers placed in the municipality. They found also spillover effects that it also affected positive for the neighboring municipalities. In application to this study it is interesting because most of the university's will be recognized as a governmental institution and also, in all county capitals there is a university (with the exception of one, Nyköping).

One other paper by Andersson (b), Lundberg & Sjöström (2007) looked for the effects of shutdowns of military bases in affected Swedish municipalities from 1992 to 1996. They investigated if there were any income and migration effects. They used two stage least squares as method based on economic growth. Their results showed no significant effects of a shutdown for the affected municipalities. From an international perspective there are also some papers that looked on military base shutdowns. For example Payolo, Vance & Vorell (2010) have used German data and there result indicated also here no significant effects but the variable of interest here was employment. Some studies have been done in USA with micro data instead of aggregated like Beaulier, Hall & Lynch looked at political pressure in how the bases were closed but could not find any evidence (2011).

There is a study conducted by the Sweden the National Audit Office (form here SNAO) (2009) who have investigated deeper into the effect of the rescue packages of shut down regiments by doing a case study of two affected municipalities where the government did some reallocation of public agencies to compensate the job losses. Their conclusion is that with the help of economic growth and the reallocation of the institutions the municipalities did not lose any jobs. But they conclude that for the institution by themselves it did cost much more then it was accounted for, they did loose several years of loose capacity and nearly nobody of the original staff did come along with the reallocation of the institution. This shows that the municipality gains positive effect of the movement but the institution itself and its original works are made worse of a movement.

To have another perspective of a reallocation I have also looked at the manufacturing sector and a study conducted by Reed Walker (2013) has looked at reallocation for industrial workers where the factory had to move to another place because of new environmental laws. The study shows that a reallocation of the industry lead to lower earnings for the workers and also a time of no employment which will hurt total earnings a worker will earn during a life time.

To conclude there is several studies that have looked at the connection between the state and the local level. But, there are few studies that have looked the effects of government agency on local level. This study will try to fill the gap by instead look in general over all municipalities and examine if the governmental presence will increase the tax revenue per capita in the municipality.

5. Method

5.1 Discussion of method

For this thesis a regression analysis have been done to investigate if there is any connection between governmental presence and tax revenue for the municipality were they are allocated. There are some issues that have been considered when this analysis has been done.

The first one is to rely on register data of people who lives or work instead of only to rely on the distribution of governmental institution. As stated in the background section the register of public agency is insufficient because it does not capture any of the sub offices (for more please see pp. (5-7). Also, with register data there will be a lesser risk of measurement errors (Card, 1999).

Second issue when computing on panel data based on Swedish municipalities it is a high probability that the result will be biased if only rely on OLS estimation which have been stated by all similar founded previous studies (for example please see Edemark & Åslund (2007). So OLS will be used as a baseline result with dummy variables for time and municipalities. In addition, it will be compared with fixed effects with respect to the time period and the cross section that previous studies use (for example see Andersson (b), Lundberg & Sjöström (2007)).

The final issue is that there is a risk of endogenous when computing this regression. The control variables human capital and income are regarded as necessary in this analysis. As stationed in the theory section the assumption is that with increased governmental intuitions jobs it will be relative more people who have studied higher education and thus more human capital which in further means more people with an education premium and higher salaries.

The assumption that have been stated in the theory section is that with more agencies allocated there it will be more white collar jobs who have higher salaries because of skills and gained human capital. This will in all push up the income in the municipality and there will be more tax revenues. But, from pure logic it is easy to see that the tax revenue is part of the income in the

municipality and thus there is an endogenous problem. It will also inflict of human capital and governmental institutions because of the supposed high correlation to income. This endogenous problem has been stated by all previous studies in Sweden when handling income in some sort of form (Andersson (b), Lundberg & Sjöström (2007) for example). To solve it many have used instrumented variables and Dahlberg & Mörk (1998) argues that a proper method would be to use first difference and as instruments use lags of the explanatory variables as instruments in a General method of moments (GMM) which I will do in this thesis as sensitivity analysis when handling panel data on Swedish municipalities. For this thesis, as a sensitivity analysis I will use the method from in same manner that take first difference and treat all explanatory variables as endogenous and use the first lag of the first differences as an instrument (and add a lag of first difference tax revenues and also add dummies for time and period).

5.2 Modell

The estimated model that has been used for this analysis can be seen down here below in equation 1.

$$TAXREV_{it} = \alpha + \beta_1 GOV_{it} + X_{it} + Y_{it} + MUN_i + TIME_t + \mathcal{E}_{it} \quad (1)$$

$TAXREV_{it}$ is the tax revenue per capita each municipality (i) per year (t)[2]. α is a constant and GOV_{it} is the share of persons who works in governmental institutions in each municipality each year, which will be the main variable of interest. The expected sign of increased government presence is positive with the reason that have been laid out in theory section that it will lead to more workers with higher wages that will bump up the tax revenue per capita. Also there are expectations that the municipality will have better infrastructure which will stimulate growth. The rest of the equation is of two vectors X_{it} &Y_{it}, control dummies for municipalities (MUN_i) and for each year ($TIME_t$) and the residual $\mathcal{E}_{it}$. In addition, as I stated in the background section as check of robust the governmental presence I will use a different measure of governmental presence. It will be the share of persons who works in public administration and in the military forces and will be called PAM_{it}. It will be the same estimated equation as in (1) with the exception that GOV_{it} is switched out to PAM_{it}.

[2] This will apply for all the other variables in this thesis that t is time and i is municipality.

Vector X_{it} contains factors that affects the tax revenues in the municipality and can be seen down here in equation 2.

$$X_{it} = \beta_2 RATETAX_{it} + \beta_3 NETCOST_{it} + \beta_4 INC_{it} \quad (2)$$

$RATETAX_{it}$ is the level of taxation on the wage each person has to pay on their monthly salary. There is no clear indication what a higher tax income will lead. It will on hand lead that a higher share of the income will go to the funding of the local welfare but it also common by all economics that a higher taxation will crowd out private consumption and create welfare losses which will in the long turn to a lower tax income per head (Borjas, 2008). $NETCOST_{it}$ is the net cost each municipality has for each year in cost when managing or producing welfare for their citizens. A higher net cost should have a positive effect on the tax income because they are viewed as positive correlated. A municipality can only have high net cost if there is a high tax income in the long run if we imply Richardian equivalence (Sørensen & Whitta-Jacobsen (2010)). INC_{it} is the income per capita and will have a positive effect with the logic reason that a higher income a person have then more will go to pay taxes.

Vector Y_{it} capture the characteristics for the municipality and are described in equation (3) down here.

$$Y_{it} = \beta_5 NETMIG_{it} + \beta_6 HUMCAP_{it} + \beta_7 CHILD_{it} + \beta_8 RET_{it} + \beta_9 FORG + \beta_{10} NOJOB \quad (3)$$

$NETMIG_{it}$ is the net migration each municipality had each year and according to theory of new economic geography it should have a positive effect. The variable is supposed to capture a stronger urbanization. With more people then more is eligible for work that will increase growth in the municipality. For example it was one of the main of variable of interest of in Andersson (b), Lundberg & Sjöström (2007) to study economic growth effects on military base shutdowns in Sweden.

$CHILD_{it}$, RET_{it}, $FORG_{it}$, $NOJOB_{it}$, represent the share of people who are children, retired, of foreign origin, unemployed. In this thesis all of these variables will be considered as negative effects on the tax income per capita. Share of children ($CHILD_{it}$) are negative because if there is a higher share of children in a municipality it will mean that there is a lesser share of potential workers who can pay tax. For share of retired (RET_{it}) it is the same reason as the former variable with the addition that retired person will pay taxes on their pension but pensions is in general lower then wages and will thus have a negative effect. $NOJOB_{it}$ is a presentative of share of people in the municipality workforce that is unemployed and in work related programs. As

unemployed you have to relate to your own wealth and/or the unemployment insurance which will be a lower income in comparison to work. In worse case the person have no unemployment insurance or wealth and will have to live on social benefits from the municipality that will drive up the cost (for example Payolo, Vance & Vorell (2010).

Finally, $HUMCAP_{it}$ is the human capital level in the municipality and is believed to have positive effects. A person with high human capital is much more likely to earn more and will have a higher chance of be employed and thereby it is more like to pay a larger amount of taxes. Plus according to economic growth a larger share of human capitals will stimulate economic growth (LeGand et al, 2008).

There were other variables that were considered in this estimation. Instead of unemployment the employment in the municipality were considered but no data could be found. Further, other variables was a dependency result that was a sum of children and retired in the municipality but it skewed the result so instead children and retired are measured separately. Finally, there were some variables that were dropped during testing up but they didn't tribute anything in explanation power in R^2 and Akiake. Those variables were share of youth (people in the age of 16-25), share of youth unemployment, population density and a county dummy. I have also testing by taking logs or take absolute value to see if there was any difference but it weren't so I choose to take log.

5.3 Data

All data is gathered from Statistic Sweden with the exception the data about unemployment which is coming from Arbetsförmedlingen who is the national institution of employment office. Their duty is to support unemployment into workfare, convey the jobs that exist and etcetera. It is also there responsibility to provide the statistics of those people who are officially unemployed. In this thesis panel data have been used and the sample is aggregated data on all Swedish municipalities. During the time period it contained 290 municipalities and the time period is ten years from 2004 to 2013 when measuring share of people in governmental institution and when looking for public administration and persons in military the time period is 2008 to 2013. The data variables that have been used are the ones who have been specified in the equation 1-3 in the above section and will down here be further specified in which kind of data have been used.

$TAXREV_{it}$ is the logged tax revenue per capita per year for each municipality in Sweden and it is specified in Swedish crowns (SEK) and is inflation adjusted to 2008 price level for the whole period.

GOV_{it} is the variable main variable of interest that is supposed to capture the government institutions presences in the municipality. As said in the background section Statistic Sweden has two register data of interest 2002: s definition who captures all persons who work in a governmental institution. The other definition is 2007: s that captures all persons who work in public administration and in the military forces. Further the data is also divided either in persons who is official registered to live there (called night) and those who officially is registered to work there (called day). The variable will be the percentage of people according to each definition in relation to total population for each year per municipality.

$RATETAX_{it}$ is the percentage of the income tax that every person has to pay on their monthly salary. The tax is dived into two parts the main part is the one that you pay to the municipality and the other one is the one you pay to the county and in this thesis it will be the sum of those two because it will be the effective tax a person will count in where to live.

$NETCOST_{it}$ is the logged net cost per capita in Swedish crowns (SEK) for each municipality for each year and is price adjusted to 2008 years of level.

INC_{it} is the logged predicted income for each municipality for each year. This was the most suitable data and it is used by the municipalities to calculate the revenues for each year.

$NETMIG_{it}$ is the net migration in percentage in each municipality for each year.

$HUMCAP_{it}$ is a proxy variable for the level of human capital in the municipality. Because the use of aggregated data there is no clear variable that will capture the human capital in the municipality. In this thesis the definition of human capital in the municipality will be the percentage of the municipality population that has at least 3 years of higher education.

$CHILD_{it}$ is the percentage of children in the municipality and that is between the ages 0 to 17.

RET_{it} is the percentage of retired people in each municipality in the given year. In Sweden there is a flexible retirement age from 63 to 67 years old and there is no official statistic of the number pensioners in a municipality. So instead, a proxy variable has been used instead which is the all person who is at least 65 years old. This will lead to the problem that this variable will not capture

persons who retired earlier and that we are capturing people who are still working and thus make it not a fully efficient variable but is the second best solution.

$FORG_{it}$ is the percentage of people in the municipality that is from foreign origin. The definition that Statistic Sweden has been used is that persons are born outside of Sweden or both of the parents are born outside of Sweden. This is a wide definition and not a homogenous group but since Arbetsförmedlingen does not have category of unemployment for foreign origin this is the second best solution to capture the effect on tax income.

$NOJOB_{it}$ is the percentage of the population in the age from 16 to 64 that is not working. In this thesis it is the sum of those who are open unemployed and those who are in work-related program for each year per municipality. To specify Arbetsförmedlingen does only register persons who are actively searching for work, which means that those who are latent unemployed does not get captured. This could lead to that in international standards that person could be recorded as unemployed but is not and vice versa. This variable is considered as a proxy variable for the level of unemployment in the municipality.

The final variables are the control dummies for municipalities (MUN_i) and for each year ($TIME_t$). ε_{it} is just only a residual.

To get an overview a descriptive table has been constructed which shows the max, min, median and the mean along with description of each variable which can be seen on the next page. As said in sub section of new economic geography the county capitals are also showed here to compare if they divvied from the total sample. The reason why is to see if there is a government agency concentration that confirms a cluster effect (for more about clusters please see p. 12).

Table (1). Description table with total sample and among county capital in brackets

Variable	Max	Min	Median	Avg.	St.	Description
GOV DAY	13,7 (7,6)	0 (1,9)	0,6 (3,8)	1,2 (4,1)	1,7 (1,4)	% of population who work in a governmental institution and is working in the municipality
GOV NIGHT	7,9 (6,5)	0 (1,8)	1,5 (3,3)	1,8 (3,6)	1,1 (1,2)	% of population who work in a governmental institution and is registered in the municipality
PAM NIGHT	14,1 (7,8)	0 (2,5)	1,3 (3,8)	1,8 (4)	1,4 (1,2)	% of population who work in public administration and is working in the municipality
PAM NIGHT	8,5 (6,1)	0 (2)	2 (3,3)	2,3 (3,5)	0,9 (0,9)	% of population who work in public administration and is registered in the municipality
INC	459658 (296615)	159325 (173212)	200893 (217124)	207916 (218404)	32096 (19179)	Predicted income per capita in SEK price deflated, logged in estimations
TAXREV	5515 (40315)	23644 (26947)	34052 (35200)	34145 (34949)	3336 (2491)	in SEK per capita in tax income price deflated , logged in estimations
NETCOST	-28168,7 (-33869,5)	-71425,8 (-52165)	-42134,9 (-40626,6)	-42537,4 (-40443,5)	5082 (3234)	net cost in SEK per capita price deflated, logged in estimations
RATETAX	34,52 (34,03)	28,89 (29,43)	32,19 (31,9)	32,09 (31,9)	1 (1)	% of sum of tax in municipality and county
NETMIG	4,4 (2,5)	-3,1 (-0,8)	0,1 (0,8)	0,1 (0,8)	0,9 (0,6)	% change of population each year
HUMCAP	28,1 (24,1)	3,7 (8,6)	7,9 (13,9)	8,9 (14,5)	3,8 (3,2)	% of population that at least have 3 years higher education
RET	32,3 (24,9)	9,4 (12,6)	20,9 (17,6)	20,8 (17,7)	3,9 (2,4)	% of population in 65+
FORG	55,8 (42,04)	2,9 (5)	11,1 (13,7)	13 (16,1)	7,4 (8,1)	% of population born outside or both parents born outside of Sweden
NOWORK	15,8 (10,8)	0,9 (2,9)	5,5 (6,2)	5,7 (6,2)	2,2 (1,6)	% of population between 16-64
CHILD	28,7 (22,1)	14,3 (17,9)	20,3 (20)	20,7 (20)	2,4 (2,4)	% of population between 0-17

For start it can been seen that there are more people who work for the public with 2007 definition because that definition includes persons who works at lower political administration levels. Also, in general is that the county capitals have more persons employed in public institutions which are expected because they are regional political central (see Background section and Result down below for more explanation). A concern is that there are some municipalities that have a higher government agency presence in comparison to the counties. A deeper check into the data it shows that it is municipalities who are having a military base (for example Karlsborg and K3) or they have university who is not in a county town (Lund for example).

As for tax income it indicates that the county capital have in general a higher tax income per capita, a lower taxation level and less expenses per capita in relation to all municipalities during this time period.

For inhabitants characteristic it indicates county capitals have a little higher net migration. They have also more people with a higher education, more people of foreign origin, and a little higher unemployment. There is a minor difference in relation of children which is less in the county capitals and there is also less retired persons which in all lead to a lower dependency ratio in relation to all Swedish municipalities.

A final notice is that the county capitals are smoother in meaning that the extreme values doe in general do not deviate as much as for the whole Swedish municipalities and there are no strong differences between the median and the average value.

To conclude the data with the description table confirms that the county capitals deviates from rest of the sample which was indicated from the theory and background that these municipalities attracts skilled persons which would explain why they have in general a higher tax income per capita. But, as the description table tells there are municipalities outside the county capitals that have better number as for example tax revenues so there is not a clear result. There can be other factors that makes the tax income is higher so this short analysis is weak. So to test if more person works for the public administration brings a higher tax income a regression analysis has been done.

6. Result

6.1 Main result of interest

For start I looked at people who lives officially in the municipality (marked as Gov Night) and works in a governmental institution and I looked first at OLS as a baseline result and compare it with fixed estimator who is believed to be more accurate. To avoid a dummy trap I removed one dummy for time and municipality. The result of the regressions can be looked at table (2-5) at pp. 27-28 & pp. 31-32. Above is the estimated coefficient marked with stars if significant[3] and under are the standard errors for the variable. The variable of interest is marked in bold and will on the top. Also the dummy variables over period (time) and cross section (municipality) will not be presented because they are only exist to make the estimation more robust but they can be viewed in the appendix if there is any interest to look at them at table 7-8 from 44.

As we can see for start both have a positive sign but the governmental agency variable on both estimations are insignificant. They only comes up to 14 % level of significance and the coefficient is economic significant weak that is on both 0,01 and would mean that one percentage more people who work for governmental agency would bump up the tax revenue by 0,01 %, so it would not affect much.

Instead of looking at people who lives there and also are working in an agency it could also be interesting to only look at the relation to people. One of the difference is the result above should have a greater effect because it is where you live officially were you pay your taxes. But, there could be a commuting effect that the works don't necessarily live there but they spend their income were they work and can bring a spillover effect for the affected municipality. So in same manner above I did estimated OLS and fixed effects and the result can be seen in table (2).

As the table showed there is no indication that the persons who work in a governmental institution have any affect at all on the municipality. The coefficient is zero and no indication of significance at all on the estimations.

For notice, I have re-estimated the all the estimations without controlling for heteroscedasticity on clusters on cross-section and tried with white heteroscedasticity period cluster. Then it will be highly significant at 1 % level when estimating on the relation on people who lives and works for a governmental agency (night) with same level of coefficient 0,01 both on OLS and Fixed effect.

[3] *=10 % **=5% and ***=1% and will be so in further tables.

When looking at the relation of people who work for a governmental institution it is the same result as with cluster the coefficient is zero and highly insignificant both on OLS and Fixed.

An issue with the result is that there is a lot of heterogeneity in the sample of what belongs to a government agency. In the official government agency register it includes the Swedish military forces, police officers, bureaucrat and people who work with law which can be viewed as classic state jobs. But, it also includes blue collar workers, vets at butcheries and professors at universities. The last group people who work universities can have an effect of its own as Andersson (a), Quigley & Whilhemson (2004) showed in their study on productivity and decentralization of Swedish universities. In Porter's (2000) chapter about clusters he mentions that a cluster can be created around a university or vice versa that a university is contributing to a cluster in provide scholars for the clusters (for more please see theory). This will lead to a problem to include universities because not all of them are public (as for example Chalmers in Gothenburg; SR, 2013) and will not be shown in the data. It could be more interesting to sort out the sample and look to the more classic public jobs. To do so I used a new variable of interest called PAM_{it}. The variable should capture all persons who work in public administration and in the Swedish military forces, a so called "bureaucrat/military" presence variable. The problem is it will also include persons who work in the lower political levels and not only in a governmental institution. But, it is the second best solution and it will allow excluding persons who works in employment agencies and professors, it will be a more homogenous sample. It will be the same estimation model with same method as before exception the switch of variable of interest. It will also be a shorter time period namely 2008-2013. The results will be presented in table (3).

Here are also the variables not significant neither if it is day nor night population and the coefficient are approximately at the same level. For notice the re-estimate result with no control for heteroscedasticity in the cross section it showed the same in meaning that same level of coefficient but is insignificant. The closest one to be significant was for night population that showed a significant level on 12 % in OLS estimation.

Table (2). Regression analysis on Tax revenue per capita in Swedish Municipalities 2004-2013

Variables	OLS NIGHT	OLS DAY	Fixed effects NIGHT	Fixed effects DAY
GOV NIGHT	**0,01**		**0,01**	
	0,007		**0,007**	
GOV DAY		**0**		**0**
		0,001		**0,001**
C	-0,668	-0,423	-0,593	-0,35
	1,409	1,432	1,4	1,422
RATETAX	0,027***	0,027***	0,027***	0,027***
	0,003	0,003	0,003	0,003
NETCOST	0,066***	0,065***	0,066***	0,065***
	0,014	0,013	0,014	0,013
INC	0,805***	0,787***	0,803***	0,785***
	0,11	0,111	0,109	0,11
NETMIG	-0,01***	-0,01***	-0,01***	-0,01***
	0,001	0,001	0,001	0,001
HUMCAP	-0,004	-0,002	-0,004	-0,002
	0,003	0,003	0,003	0,003
CHILD	-0,014***	-0,014***	-0,014***	-0,014***
	0,004	0,004	0,004	0,004
RET	0	0	0	0
	0,002	0,002	0,002	0,002
FORG	-0,004***	-0,004***	-0,004***	-0,004***
	0,001	0,001	0,001	0,001
NOWORK	-0,001	0	-0,001	0
	0,001	0,001	0,001	0,001
R2	0,978	0,978	0,978	0,978
ADJ. R2	0,976	0,976	0,976	0,976
Akaike	-5,475	-5,468	-5,475	-5,468
Schwarz	-4,836	-4,829	-4,836	-4,829
Durbin-Watson	1,421	1,413	1,42	1,413

Table (3.) Regression analysis on Tax revenue per capita in Swedish Municipalities 2008-2013

Variables	OLS NIGHT	OLS DAY	Fixed effects NIGHT	Fixed effects DAY
PAM NIGHT	**0,002**		**0,002**	
	0,002		**0,002**	
PAM DAY		**0,001**		**0,001**
		0,001		**0,001**
C	1,195	1,226	1,253	1,282
	1,543	1,557	1,544	1,558
RATETAX	0,021***	0,021***	0,021***	0,021***
	0,003	0,003	0,003	0,003
NETCOST	0,068***	0,068***	0,068***	0,068***
	0,022	0,022	0,022	0,022
INC	0,641***	0,639***	0,639***	0,637***
	0,118	0,12	0,118	0,12
NETMIG	-0,008***	-0,008***	-0,008***	-0,008***
	0,001	0,001	0,001	0,001
HUMCAP	-0,002	-0,002	-0,002	-0,002
	0,003	0,003	0,003	0,003
CHILD	0	0	0	0
	0,002	0,002	0,002	0,002
RET	0,004***	0,004***	0,004***	0,004***
	0,001	0,001	0,001	0,001
FORG	-0,006***	-0,006***	-0,006***	-0,006***
	0,001	0,001	0,001	0,001
NOWORK	-0,001	-0,001	-0,001	-0,001
	0,001	0,001	0,001	0,001
R2	0,981	0,981	0,981	0,981
ADJ. R2	0,977	0,977	0,977	0,977
Akaike	-5,752	-5,751	-5,752	-5,751
Schwarz	-4,794	-4,793	-4,794	-4,793
Durbin-Watson	1,764	1,766	1,764	1,766

6.2 Sensitivity analysis

As mentioned in the method section it is highly likely there is an endogenous issue when estimating tax revenue per capita income and human capital together, it is highly likely that they depend on each other and especially tax revenue who is from logic depends on the income level in the municipality. To solve this I will do as previous studies does do GMM estimation with lags as instruments. To be specific I will follow the direction from Dahlberg & Mörk (1998) that says as first stage take the first difference on all variables. The reduced from will be between the present first difference on tax revenue and the lag of all explanatory variables where there should be no endogenous from. As method it will be the one previously described and it will be on all variables of interest (day and night on GOV_{it} and PAM_{it}) along with all explanatory variables with dummy for time and place. Also as mentioned before in method section I will also present the result with first difference estimation to compare the effect of the GMM estimation and as said before first difference can be viewed as a complement to do fixed effects. The result of the first differences estimations will be presented at table (4-5).

The result for both night and day with government agencies with first difference showed also here insignificant result with a less weak strength on the coefficient. On notice is that much lower R^2 in comparison to use fixed effect. But the result from the estimations on bureaucrat/military is here showing significant result and it is both on the 1 % level for day and night population. Night population is little bit stronger who have 0,004 in comparison to 0,003. So, this result indicates when looking over changes between periods it seems that more people in public administration and in military forces will give higher increase in tax revenues. It is also here a lesser explanation power here in comparison to use fixed effects.

When I was executing the GMM models it was not possible to control for cross section dummies (municipality dummies) so the results will differ to the other methods that both could control for time and place. The result for the GMM method can be seen in table (4-5).

As the table shows the result differs in comparison to previous methods. When only able to control for time the result for government agency for night population the result is significant at 1 % level and is showing a negative effect with a coefficient on -0,078 which is much larger than previous estimations. The result is similar when to look at day populations that it is also significant at 1 % level but the coefficient is approximately half as weak and are -0,034.

When to look at the effects of people in public administration the results differ from those above. For night population it showed a strong significance at 1% level and the coefficient is 0,147 strong. Day population was in this estimation insignificant but showed a positive sign on the coefficient.

To summarize, in this method I have looked at OLS with dummies over time and place, fixed effects on period and on cross section, a first difference estimation and GMM estimation where the two latter was consider as a sensitivity analysis over the result. For results for night population who works in a government agency it was close to be significant and showed a coefficient around 0,001. Day population for government agency showed no indication if significance and it was the same when to look if there was a bureaucrat/military effect on both night and day population. In the sensitivity analysis it was no sign of significance when estimating on people in government agencies both for night and day with first difference. For bureaucrat/military it showed a strong significance for both day and night population when estimating for first difference. The night population effect was twice as large as the day population. When conducting a sensitivity test I was not able to control for municipalities and when estimating for government agency it showed a much stronger negative effect in comparison to former methods. It was also significant for both day and night population. In mean while the GMM estimation did confirmed the first difference result for bureaucrat/military for night population with same sign on the coefficient but with a much stronger effect. For day population it was insignificant but showed the same sign on the coefficient.

Table (4) Regression analysis on Tax revenue per capita in Swedish Municipalities 2004-2013

Varibles	First diffrence NIGHT	First diffrence DAY	GMM NIGHT	GMM DAY
GOV NIGHT	**0,006**		**-0,078*** **	
	0,006		**0,011**	
GOV DAY		**0,002**		**-0,034*** **
		0,002		**0,01**
C	0,038***	0,038***		
	0,005	0,005		
TAXREV(-1)			0,253***	0,243***
			0,028	0,028
RATETAX	0,02***	0,02***	0,057***	0,059***
	0,003	0,003	0,005	0,007
NETCOST	0,029	0,028	0,161***	0,166***
	0,019	0,019	0,029	0,029
INC	-0,237*	-0,238**	-0,656***	-0,664***
	0,122	0,121	0,101	0,099
NETMIG	-0,005***	-0,005***	0	0
	0,001	0,001	0,001	0,001
HUMCAP	-0,007*	-0,007*	0,063***	0,062***
	0,004	0,004	0,005	0,005
CHILD	-0,003	-0,003	-0,008*	-0,005
	0,002	0,002	0,005	0,004
RET	-0,002	-0,002	-0,006**	-0,003
	0,003	0,003	0,003	0,003
FORG	-0,004**	-0,004**	-0,01***	-0,009***
	0,002	0,002	0,002	0,002
NOWORK	0,001	0,001	-0,001	0
	0,001	0,001	0,001	0,001
R2	0,742	0,742		
ADJ. R2	0,707	0,707		
Akaike	-5,754	-5,753		
Schwarz	-5,056	-5,056		
Durbin-Watson	1,756	1,752		

Table (5) Regression analysis on Tax revenue per capita in Swedish Municipalities 2008-2013

Varibles	First diffrence NIGHT	First diffrence DAY	GMM NIGHT	GMM DAY
PAM NIGHT	**0,004*** **		**0,147** **	
	0,001		**0,062**	
PAM DAY		**0,002*** **		**0,009**
		0,001		**0,01**
C	0,034***	0,034***		
	0,006	0,006		
TAXREV(-1)			0,31***	0,302***
			0,109	0,1
RATETAX	0,019***	0,02***	0,026	0,058**
	0,003	0,003	0,03	0,021
NETCOST	0,031	0,031	0,294**	0,309***
	0,022	0,022	0,115	0,082
INC	-0,24***	-0,244***	-0,367	-0,243
	0,081	0,081	0,311	0,263
NETMIG	-0,004***	-0,004***	-0,006*	-0,006**
	0	0,001	0,004	0,003
HUMCAP	-0,001	0	0,019	0,035***
	0,001	0,001	0,016	0,012
CHILD	0	0	-0,012	-0,014
	0,003	0,003	0,023	0,019
RET	0,005***	0,005*	-0,003	-0,006
	0,003	0,003	0,011	0,009
FORG	-0,005***	-0,005***	-0,025***	-0,029***
	0,001	0,001	0,006	0,005
NOWORK	0,003***	0,003***	0,021***	0,024***
	0,001	0,001	0,009	0,007
R2	0,729	0,729		
ADJ. R2	0,658	0,657		
Akaike	-5,801	-5,8		
Schwarz	-4,692	-4,691		
Durbin-Watson	2,255	2,259		

6.3 Other variables

The focus in this paper is government agency presences along with bureaucrat/military and the other variables were control variables to exclude factors that could inflict the result. Nevertheless, I will in short have a review of the other variables based on the estimations that have been conducted with the exception of time and places dummy which is only to help the strength of the estimations.

For the tax rate it was always significant with the exception for all estimations that were conducted with the exception of one time which was GMM for night population for bureaucrat/military. The coefficient level is between from 0,001 up to 0,005 which can be viewed as stable. As stated in the method section it was unclear what the expected sign should be in response to welfare losses but as the estimations shows it will have a in short perspective a positive effect.

The net cost variable showed always a positive sign as expected due to Richardian equivalence. About significance it was always significant and is around 0,06 for the coefficient with the exception in GMM estimate where it is higher. The only time it got insignificant was when doing first difference estimation which could mean that increased net cost over time does not increase the tax revenues but for the actual period it does.

Income differs much from the other variables. When only looking to fixed effect and OLS it shows a high coefficient and strong significance. But when doing first difference it shows to be negative which is highly unexpected and cannot be explained. When doing GMM estimation it differs between the different variables of interest. When estimating with public agency and military it get insignificant and when estimating with government agency it gets significant but the coefficient is negative. Because of the strength of the coefficient when doing OLS and fixed effects and it shows helps to explain much with respect to R^2 it is confirmed that an instrument was necessarily to control with. But when doing the estimation it behaves totally unexpected. It may be due to not be able to control for municipalities which could also explain for the government agency sign also which is going against the hypothesis.

Net migration was always significant with the exception when it was executed in for government agencies in GMM estimation. When significant is always negative regardless of estimation which is going against the expected theory because it would be assign for economic growth.

For human capital the result is mixed. When estimating with GMM it does show a positive sign around 0,03 to 0,06. But outside GMM it does always shows negative coefficient which is going against theory and cannot be explained.

For children the entire coefficient was always negative but was mainly only significant when conducting OLS and fixed effect for government agency. There the coefficient is stable and shows a negative sign around 0,001. This was expected because more children did mean that would be lesser persons that could potential work, but the coefficient is rather weak so it will not have a big effect on the tax revenues.

It was the expected sign for retirement that it would mean a higher share of people would mean fewer potential workers. But the results are mixed. For government agencies when significant with GMM estimation it is negative with a weak coefficient sign. When estimating for public administration military forces it shows a positive significance which cannot really be explained.

The last two variables foreigners and the proxy variable for unemployment behaves as expected that it would have negative effect on the tax revenues. The exception is when estimating unemployment in GMM for public agency and military effect then it shows positive.

To summarize, when significant the control variables behaved as expected were children and foreign origin. Tax rate was unclear in which signs but was robust and positive. The rest of the variable showed often the expected sign but was not completely robust.

7. Conclusion and further studies

In this study I have tried to investigate if public agencies do have any effect on the tax revenue, by do a regression analysis between share of people working for a public agency and the tax revenue per capita. First as a background check an investigation of the distribution of the governmental agencies in Sweden was done and there it seemed the county capital did have more institutions which were allocated there. This could be explained with theory in New Economic Geography. In addition this thesis argued that more allocated governmental institution would stimulate consumption and increase the human capital level in the municipality which would lead to higher wages and thereby more tax revenues. The estimated model was as mentioned above with control variables based on economic growth, new economic geography, public economics and labour economic. The sample that was used was aggregated data on municipality level which was at the time 290 and the time period was ten respective six years. Further, the method was to look at the share of people who did work in the municipality with the specific profession and ratio of people who officially were living in the municipality and the specific profession. Two variables were at interest and were regressed separately in OLS, fixed effect, first difference and GMM.

For the results it is not a clear indication that more people who works in a government agency or in public administration/Swedish military forces will benefit the municipality with a higher tax revenue. When controlling for income and people with higher education with more it shows that more state presence by itself will not increase the tax revenues. Maybe it is because the wage differences are not as high it will change for the municipality in general. It could also maybe that also that there are great differences but there to relative few people that work it will effect for the entire municipality in wage structure. As the descriptive table the maximum state presence is at 14 % while the median and the average is around 2 % which strengthen the latter explanation.

What is telling for there is a positive connection is the closeness to get significant result that increased population ratio of persons who lives in the municipality and work in a government agency. As speculation, to control for cluster effect in cross section it will lead to a lower rank which made the result insignificant. When not controlling for cluster effect, then the variable for government presence for night population is highly significant and positive. But, by looking at the residuals it was not definitely clear that the regression was homoscedastic rather it tended to be heteroskedastic so it must be controlled for. It is also relative few time periods in respect to the number of municipalities (the ratio is 10/290) so controlling for heteroscedasticity in cross

section was valued as most important. Also the effect is weak as it shows that with one percentage more people working for the governmental agency will lead to 0,01 % higher tax revenues. In addition to governmental presence, it is unlikely that increased governmental presences would lead to lesser tax revenues which is showing in the GMM estimation. As speculation, because it was only possible controlling for time it lead to the negative result. When controlling for neither time nor place the result showed a positive significant result that was similar in strength to fixed effects estimate. Early during testing up the regression in OLS and fixed effects I did as control what would happen if I only controlled for cross section or time. The results showed that only to control for time would lead to negative result and affecting the other variables against what is expected. The conclusion is similar to previous studies when handling Swedish municipality data the result must be controlled for time and place. A final note of governmental institutions, there is no indication at all that to only look at the ratio of people who work in the municipality with government agency as profession (day population) does not bump up the tax revenues.

Another thing that is indicating there is a positive connection was the examination between changes in public administration/military forces with tax revenues. There it showed positive results both on day and night population when estimating with GMM and first difference. The disclaimer is it is not fully robust because there was no significant result when estimating with OLS and fixed effects and the economic significance is weak. It can be that the effect is not static while it is dynamic. In other words, it could mean that if there is an expansion with more public administration and/or persons in the military service it will be more public investments and consumption in the area which will stimulate income and thereby the tax revenues which complies to the theory.

So, to conclude can the hypothesis can it be confirmed, will more state presence increase the tax revenues per capita in the municipality? It cannot be confirmed because lack of robust result. But, with more government presence it can gain other things as for example a bigger tax base and bring diversity among the workforce to the municipality.

This result can contribute to other studies that have been done to look on government spending and their effects on municipality level. This study differ from formers ones that it have looked mainly on grants, the behavior on local level or on a specific institution on few municipalities. Here the main interests have been to look generally on all municipalities to examine governmental jobs and see if they stimulate the local economy. This study recognizes that the state instead of give grants directly the state can support municipalities indirect or direct by

allocating a public institution there. The recognition can also be supported when to look at changes over year that it seems it could be a positive connection.

A final comment is that this study has looked from the municipality perspective to see if there are any positive benefits. But a change of intuitions allocation seems to have negative effects for the persons that works in the institution because they have to move and for the institution who may lose trained workers and lost time to executing there duty which is confirmed of previous studies.

Recommendation for further studies can be that instead of looking at aggregated level it may instead look with micro data to follow of what happens with to loose government presence in the community. For example, do a difference in difference with a military base closure. On other recommendation could be at look at political alignment and the probability of gaining or losing an institution in a municipality. Previous studies have looked at grants. But, the government may also have direct or indirect motives here when handling cut downs/expansions on jobs in the government institutions to vote maximize.

8. References

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9. Appendix

Figure (1). Histogram of Swedish institution headquarters (x-axis no. of institutions; y-axis no. of municipalities)

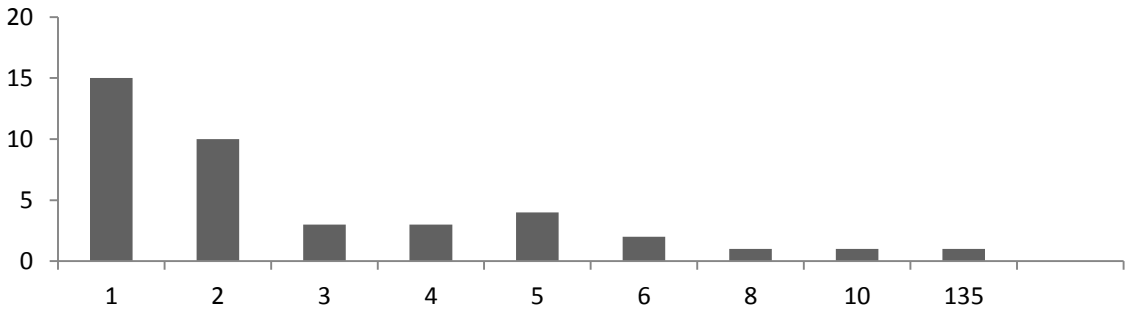

Figure (2). Histogram of Swedish institution headquarters and their local branch (x-axis no. of institutions; y-axis no. of municipalities)

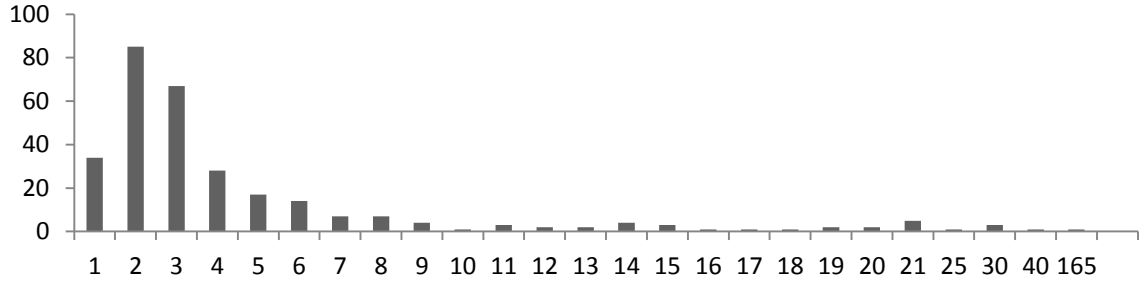

Table (6). Of shutdown and opening of government agencies in Sweden

Year	New	Shutdown	+/-
2008	26	22	4
2009	12	9	3
2010	9	6	3
2011	3	7	-4
2012	2	5	-3
2013	4	10	-6
2014	3	0	3

Table (7). Results of time and place dummies with OLS, Fixed Effects and First Diffrence

	OLS NIGHT	FD NIGHT	OLS DAY	FD DAY	OLS NIGHT	FD NIGHT	OLS DAY	FD DAY
VARIABLE	GOV	GOV	GOV	GOV	PAM	PAM	PAM	PAM
D_2004	-0,022		-0,022					
	0,018		0,018					
D_2005	-0,012	0,01***	-0,011	-0,295***				
	0,015	0,001	0,015	0,065				
D_2006	0,02	0,022***	0,021	-0,595***				
	0,013	0,002	0,014	0,127				
D_2007	0,021*	-0,016***	0,022*	0,426***				
	0,013	0,003	0,013	0,056				
D_2008	0,037***	0,002	0,037***	-0,047	0,018**		0,018*	
	0,011	0,003	0,011	0,074	0,009		0,009	
D_2009	0,008*	-0,006***	0,008	0,168**	0,004	-0,01***	0	-0,01***
	0,005	0,002	0,005	0,076	0	0,001	0,004	0,001
D_2010	-0,022***	-0,05***	-0,022***	1,337***	-0,026***	-0,051***	-0,026***	-0,051***
	0,004	0,003	0,004	0,14	0,003	0,002	0,003	0,003
D_2011	-0,001	-0,026***	-0,001	0,703***	-0,007	-0,025***	-0,007*	-0,025***
	0,005	0,006	0,005	0,123	0,004	0,004	0,004	0,004
D_2012	0,003	-0,022***	0,003	0,595***	-0,001	-0,022***	-0,002	-0,022***
	0,004	0,004	0,004	0,07	0,004	0,003	0,004	0,003
D__ENKOPING	0,021	-0,003	0,038***	0,074	0,028**	-0,004	0,029*	-0,004
	0,014	0,003	0,011	0,088	0,017	0,005	0,016	0,005
D__OSTERAKER	0,011	-0,008	0,023	0,229	0,006	-0,005	0,008	-0,005
	0,025	0,008	0,03	0,2	0,031	0,005	0,032	0,006
D__VALDEMARSVIK	0,019	-0,002	0,013	0,052	0,011	-0,011	0,009	-0,011
	0,01	0,006	0,013	0,161	0,013	0,008	0,013	0,008
D_ALE	0,091***	-0,007	0,09***	0,174*	0,08***	-0,005	0,08***	-0,005
	0,018	0,004	0,018	0,099	0,026	0,006	0,027	0,006
D_ALINGSAS	0,065***	-0,009**	0,058***	0,249**	0,043***	-0,009**	0,042***	-0,009**
	0,015	0,005	0,012	0,099	0,011	0,005	0,01	0,004
D_ALMHULT	0,081***	0,009	0,07***	-0,231	0,077***	0,001	0,076***	0,001
	0,015	0,01	0,012	0,26	0,016	0,014	0,016	0,014
D_ALVDALEN	-0,004	-0,005	-0,01	0,114	-0,027	-0,005	-0,03	-0,005
	0,013	0,004	0,017	0,122	0,019	0,008	0,018	0,008
D_ALVESTA	0,063***	-0,003	0,062***	0,083	0,059**	-0,009	0,057***	-0,009
	0,012	0,006	0,012	0,153	0,023	0,01	0,024	0,01
D_ALVKARLEBY	0,059***	-0,008*	0,061***	0,212**	0,061***	-0,009	0,061***	-0,008
	0,017	0,004	0,017	0,1	0,022	0,005	0,022	0,005
D_ALVSBYN	0,05***	-0,004	0,055***	0,11	0,027**	-0,003	0,027**	-0,003
	0,013	0,004	0,012	0,105	0,013	0,005	0,014	0,005
D_AMAL	0,041***	-0,014***	0,036***	0,381***	0,018	-0,021***	0,017	-0,021***
	0,014	0,005	0,012	0,121	0,02	0,006	0,02	0,006
D_ANEBY	0,024**	0,007	0,02	-0,204	0,027	0,001	0,026	0,001

	0,012	0,005	0,014	0,151	0,018	0,007	0,018	0,007
D_ANGE	0,024	-0,003	0,033*	0,071	0,021	0,001	0,021	0,002
	0,019	0,006	0,017	0,143	0,017	0,006	0,017	0,006
D_ANGELHOLM	0,008	0	0,004	0,006	-0,004	-0,001	-0,004	-0,001
	0,01	0,004	0,009	0,104	0,01	0,004	0,01	0,004
D_ARBOGA	0,041***	-0,011***	0,049***	0,312***	0,031*	-0,013***	0,032**	-0,014***
	0,01	0,003	0,01	0,082	0,017	0,004	0,017	0,004
D_ARE	0,011	0,003	0,001	-0,066	0,004	0,005	0,002	0,005
	0,01	0,005	0,014	0,142	0,016	0,004	0,014	0,004
D_ARJANG	-0,027	-0,013	-0,031*	0,348*	-0,056*	-0,018	-0,057*	-0,018
	0,017	0,008	0,016	0,187	0,033	0,011	0,033	0,011
D_ARJEPLOG	0,029	0,006	0,043**	-0,173	0,041*	0,02	0,044*	0,02*
	0,024	0,009	0,019	0,243	0,023	0,011	0,023	0,011
D_ARVIDSJAUR	0,02	-0,004	0,049***	0,111	0,027**	0	0,029**	-0,001
	0,022	0,004	0,011	0,097	0,012	0,002	0,013	0,002
D_ARVIKA	0,012	-0,003	0,004	0,087	-0,001	-0,011	-0,001	-0,011
	0,008	0,005	0,008	0,122	0,013	0,007	0,013	0,007
D_ASELE	0,044***	-0,003	0,033***	0,087	-0,002	0,004	-0,004	0,004
	0,013	0,007	0,01	0,161	0,022	0,006	0,022	0,006
D_ASKERSUND	0,023**	0,001	0,02	-0,011	0,017	-0,003	0,016	-0,004
	0,011	0,003	0,012	0,072	0,015	0,004	0,015	0,004
D_ASTORP	0,028*	-0,007*	0,024*	0,184**	-0,004	-0,004	-0,005	-0,004
	0,015	0,004	0,014	0,089	0,031	0,005	0,032	0,006
D_ATVIDABERG	0,044***	-0,01**	0,041***	0,264***	0,002	-0,013**	0,001	-0,013**
	0,013	0,004	0,012	0,094	0,016	0,006	0,016	0,006
D_AVESTA	0,056***	-0,006**	0,053**	0,159*	0,083***	-0,008*	0,081***	-0,008*
	0,021	0,003	0,022	0,081	0,022	0,005	0,022	0,005
D_BASTAD	0,034***	0,006	0,023**	-0,152	0,039***	-0,002	0,038***	-0,002
	0,013	0,005	0,01	0,134	0,01	0,008	0,01	0,008
D_BENGTSFORS	0,029*	-0,016***	0,024	0,434***	0,022	-0,018***	0,02	-0,018***
	0,016	0,004	0,016	0,076	0,024	0,005	0,024	0,005
D_BERG	0,016	-0,005	0,01	0,139	-0,023	-0,006	-0,024	-0,006
	0,013	0,007	0,014	0,171	0,019	0,006	0,018	0,006
D_BJURHOLM	0,043***	-0,013	0,035**	0,362*	-0,024	-0,007	-0,028	-0,008
	0,017	0,009	0,015	0,21	0,025	0,006	0,025	0,007
D_BJUV	0,043**	-0,012***	0,038**	0,316***	0,015	-0,006	0,014	-0,006
	0,017	0,004	0,016	0,09	0,034	0,004	0,034	0,004
D_BODEN	0,029	-0,009**	0,069**	0,249***	0,047***	-0,011**	0,054***	-0,012**
	0,024	0,004	0,006	0,091	0,014	0,005	0,014	0,005
D_BOLLEBYGD	0,067***	-0,005	0,067***	0,13	0,054***	-0,008	0,053***	-0,008
	0,014	0,007	0,014	0,184	0,019	0,01	0,019	0,01
D_BOLLNAS	-0,005	-0,009**	-0,012	0,249***	-0,031**	-0,013**	-0,033**	-0,013**
	0,009	0,004	0,009	0,088	0,013	0,006	0,013	0,005
D_BORAS	0,091***	-0,008*	0,09***	0,217**	0,106***	-0,007	0,105***	-0,007
	0,016	0,004	0,015	0,096	0,024	0,005	0,024	0,005
D_BORGHOLM	0,006	0,004	-0,003	-0,104	-0,008	-0,011	-0,01	-0,011

	0,01	0,008	0,011	0,198	0,013	0,009	0,013	0,008
D_BORLANGE	0,043**	-0,009**	0,056***	0,233***	0,065***	-0,009*	0,066***	-0,01**
	0,019	0,004	0,016	0,076	0,019	0,005	0,018	0,005
D_BOTKYRKA	0,095***	-0,014***	0,105***	0,383***	0,138**	-0,01**	0,14**	-0,01**
	0,032	0,005	0,033	0,106	0,058	0,005	0,059	0,005
D_BOXHOLM	0,024*	0	0,018	-0,003	0,007	-0,005	0,004	-0,005
	0,012	0,006	0,013	0,175	0,019	0,01	0,019	0,01
D_BRACKE	0,032***	-0,004	0,031***	0,108	0,011	-0,007	0,011	-0,007
	0,009	0,005	0,01	0,124	0,018	0,007	0,017	0,006
D_BROMOLLA	0,065***	-0,011**	0,058***	0,295**	0,048***	-0,017***	0,046**	-0,017***
	0,013	0,005	0,013	0,117	0,018	0,006	0,018	0,006
D_BURLOV	0,066***	-0,013**	0,072***	0,35***	0,068**	-0,006**	0,069*	-0,005*
	0,016	0,006	0,019	0,124	0,034	0,003	0,035	0,003
D_DALS_ED	0,064***	-0,017***	0,055***	0,465***	0,044*	-0,025***	0,042	-0,025***
	0,018	0,006	0,019	0,145	0,026	0,008	0,025	0,008
D_DANDERYD	0,095	-0,013	0,097	0,333	0,098	-0,002	0,099	-0,002
	0,083	0,012	0,089	0,32	0,076	0,014	0,077	0,014
D_DEGERFORS	0,065***	-0,012**	0,06***	0,315**	0,07**	-0,016**	0,069**	-0,016**
	0,021	0,006	0,021	0,139	0,029	0,008	0,029	0,008
D_DOROTEA	0,033**	0	0,027*	-0,006	0,019	0,002	0,017	0,001
	0,014	0,007	0,015	0,192	0,028	0,01	0,028	0,01
D_EDA	0,015	-0,013**	0,013	0,356***	0,019	-0,016	0,019	-0,016
	0,025	0,006	0,025	0,157	0,042	0,011	0,042	0,011
D_EKERO	0,012	-0,002	0,026	0,053	-0,004	0,001	-0,003	0,001
	0,03	0,006	0,035	0,153	0,033	0,007	0,033	0,006
D_EKSJO	0,03**	0	0,048***	0,004	0,049***	-0,003	0,049***	-0,004
	0,013	0,006	0,008	0,149	0,01	0,008	0,01	0,008
D_EMMABODA	0,048***	-0,007	0,039**	0,172	0,055**	-0,017**	0,053**	-0,016**
	0,017	0,005	0,017	0,134	0,025	0,007	0,025	0,007
D_ESKILSTUNA	0,093***	-0,009*	0,095***	0,231**	0,113***	-0,014**	0,112***	-0,014**
	0,016	0,004	0,016	0,106	0,026	0,006	0,026	0,006
D_ESLOV	0,003	0,002	0,006	-0,047	-0,011	0,006	-0,011	0,006
	0,007	0,005	0,008	0,142	0,018	0,006	0,018	0,006
D_ESSUNGA	0,029***	-0,002	0,022**	0,063	0,004	-0,008	0,002	-0,008
	0,01	0,006	0,011	0,157	0,019	0,007	0,018	0,007
D_FAGERSTA	0,121***	-0,014**	0,125***	0,372***	0,154***	-0,02**	0,153***	-0,02**
	0,029	0,006	0,029	0,141	0,043	0,009	0,043	0,009
D_FALKENBERG	0,047***	0,004	0,04***	-0,119	0,029	-0,001	0,027	-0,002
	0,01	0,005	0,008	0,127	0,019	0,005	0,019	0,005
D_FALKOPING	0,027***	-0,002	0,025***	0,052	0,011	-0,004	0,01	-0,004
	0,007	0,006	0,007	0,15	0,017	0,008	0,017	0,008
D_FALUN	0,048***	-0,004	0,055***	0,111	0,06***	-0,008**	0,061***	-0,007**
	0,007	0,004	0,007	0,092	0,008	0,004	0,009	0,004
D_FARGELANDA	0,03**	-0,007	0,026***	0,197	0,006	-0,005	0,004	-0,006
	0,013	0,005	0,013	0,13	0,023	0,008	0,023	0,008
D_FILIPSTAD	0,033**	-0,015***	0,027*	0,41***	0,019	-0,018***	0,018	-0,018***

	0,015	0,005	0,016	0,121	0,026	0,005	0,026	0,005
D_FINSPANG	0,079***	-0,005	0,071***	0,131	0,072***	-0,006	0,07***	-0,006
	0,015	0,004	0,014	0,097	0,018	0,006	0,019	0,006
D_FLEN	0,064***	-0,006	0,067***	0,161	0,056**	-0,015**	0,055**	-0,015**
	0,013	0,005	0,012	0,13	0,025	0,007	0,026	0,007
D_FORSHAGA	0,022**	-0,008***	0,02*	0,22***	-0,018	-0,012***	-0,019	-0,012***
	0,011	0,003	0,011	0,065	0,013	0,003	0,013	0,003
D_GAGNEF	0,035***	-0,001	0,034***	0,018	0,006	-0,001	0,006	-0,001
	0,006	0,003	0,006	0,083	0,012	0,003	0,012	0,003
D_GALLIVARE	0,085***	0,008	0,081***	-0,212	0,114***	0,015**	0,113***	0,015**
	0,02	0,005	0,021	0,161	0,023	0,007	0,022	0,007
D_GAVLE	0,041***	-0,008**	0,054***	0,211**	0,065***	-0,011***	0,066***	-0,011***
	0,014	0,004	0,01	0,085	0,008	0,002	0,007	0,003
D_GISLAVED	0,115***	-0,008	0,108***	0,208	0,109***	-0,003	0,107***	-0,003
	0,023	0,008	0,022	0,196	0,038	0,011	0,038	0,011
D_GNESTA	0,055***	-0,002	0,064***	0,061	0,045***	-0,004	0,044***	-0,004
	0,011	0,005	0,01	0,135	0,013	0,009	0,014	0,009
D_GNOSJO	0,158***	-0,01	0,153***	0,254	0,168***	-0,006	0,166***	-0,006
	0,031	0,011	0,03	0,256	0,046	0,015	0,047	0,015
D_GOTEBORG	0,111***	-0,009	0,107***	0,236**	0,179***	-0,009	0,178***	-0,009
	0,021	0,006	0,02	0,13	0,018	0,007	0,018	0,006
D_GOTENE	0,056***	-0,004	0,05***	0,116	0,028*	-0,005	0,027	-0,005
	0,011	0,004	0,01	0,111	0,016	0,006	0,016	0,006
D_GOTLAND	-0,041**	0,004	-0,033*	-0,112	-0,034**	0,002	-0,033*	0,002
	0,02	0,003	0,018	0,095	0,019	0,005	0,02	0,005
D_GRASTORP	0,018	-0,006*	0,025***	0,164**	0,002	-0,008***	0,003	-0,008**
	0,013	0,003	0,01	0,077	0,01	0,003	0,011	0,003
D_GRUMS	0,036*	-0,011***	0,031	0,296***	0,036*	-0,018***	0,034*	-0,018***
	0,02	0,004	0,021	0,091	0,02	0,004	0,02	0,004
D_GULLSPANG	0,03*	-0,007*	0,025	0,182*	0,035	-0,016***	0,034	-0,016***
	0,016	0,004	0,017	0,097	0,025	0,006	0,025	0,006
D_HABO	0,103***	-0,014*	0,115***	0,36*	0,097***	-0,01	0,099***	-0,01
	0,026	0,008	0,029	0,201	0,033	0,007	0,035	0,007
D_HABO01	0,052***	0,002	0,049***	-0,066	-0,011	0,013	-0,011	0,013
	0,016	0,008	0,015	0,207	0,011	0,009	0,012	0,009
D_HAGFORS	0,038***	-0,011*	0,029	0,298**	0,039**	-0,015*	0,037*	-0,015*
	0,017	0,006	0,018	0,136	0,021	0,009	0,021	0,009
D_HALLEFORS	0,064***	-0,009	0,061***	0,248*	0,081**	-0,016	0,079**	-0,016
	0,021	0,006	0,021	0,15	0,035	0,01	0,036	0,01
D_HALLSBERG	0,032***	-0,009**	0,037***	0,243***	0,021	-0,013**	0,02	-0,013**
	0,015	0,004	0,014	0,08	0,019	0,005	0,019	0,005
D_HALLSTAHAMMAR	0,082***	-0,012***	0,081***	0,328***	0,078**	-0,013*	0,078**	-0,013*
	0,021	0,004	0,02	0,121	0,034	0,007	0,034	0,007
D_HALMSTAD	0,052***	-0,001	0,057***	0,015	0,067***	-0,003	0,067***	-0,003
	0,007	0,006	0,007	0,159	0,011	0,01	0,011	0,01
D_HAMMARO	0,076***	-0,005	0,076***	0,133	0,044***	-0,006	0,045***	-0,006

	0,02	0,005	0,021	0,116	0,014	0,005	0,014	0,005
D_HANINGE	0,037	-0,013***	0,049**	0,346***	0,067*	-0,012**	0,068*	-0,013**
	0,026	0,004	0,024	0,083	0,035	0,005	0,035	0,006
D_HAPARANDA	0,176***	-0,004	0,189***	0,097	0,222***	0,001	0,225***	0,002
	0,032	0,006	0,03	0,151	0,061	0,006	0,062	0,005
D_HARJEDALEN	0,028*	-0,006	0,021	0,172	0,011	-0,002	0,009	-0,002
	0,015	0,005	0,017	0,127	0,022	0,004	0,021	0,004
D_HARNOSAND	0,026	-0,009***	0,062***	0,249***	0,054***	-0,013***	0,059***	-0,013***
	0,024	0,003	0,006	0,053	0,01	0,002	0,012	0,002
D_HARRYDA	0,102***	-0,005	0,096***	0,12	0,059***	-0,004	0,058**	-0,004
	0,032	0,005	0,03	0,111	0,023	0,004	0,023	0,004
D_HASSLEHOLM	0,013**	-0,004	0,009*	0,104	-0,001	-0,007**	-0,003	-0,007**
	0,005	0,004	0,005	0,087	0,013	0,003	0,013	0,003
D_HEBY	0,015	-0,001	0,017	0,013	0,006	-0,01**	0,004	-0,01**
	0,015	0,007	0,014	0,172	0,022	0,005	0,022	0,005
D_HEDEMORA	0,032***	-0,002	0,027**	0,046	0,04**	-0,003	0,038**	-0,003
	0,012	0,003	0,013	0,088	0,02	0,003	0,02	0,003
D_HELSINGBORG	0,06***	-0,005	0,054***	0,127	0,085***	-0,004	0,085***	-0,004
	0,017	0,004	0,015	0,088	0,018	0,003	0,019	0,003
D_HERRLJUNGA	0,053***	0,001	0,048***	-0,035	0,045**	-0,006	0,043**	-0,006
	0,013	0,005	0,014	0,13	0,02	0,004	0,02	0,004
D_HJO	0,03***	-0,003	0,026***	0,089	0,011	-0,013**	0,012	-0,013**
	0,005	0,005	0,004	0,143	0,008	0,006	0,007	0,006
D_HOFORS	0,082***	-0,007	0,076***	0,188	0,098***	-0,013	0,097***	-0,013
	0,024	0,009	0,024	0,221	0,034	0,015	0,034	0,015
D_HOGANAS	0,056**	-0,002	0,044**	0,047	0,026*	-0,002	0,025*	-0,002
	0,026	0,004	0,021	0,108	0,013	0,005	0,014	0,005
D_HOGSBY	0,016	-0,004	0,007	0,108	0,011	-0,013	0,009	-0,013
	0,014	0,007	0,015	0,181	0,028	0,011	0,028	0,011
D_HOOR	0,005	0,004	0,006	-0,102	-0,017***	0,008***	-0,017***	0,008***
	0,008	0,004	0,008	0,142	0,005	0,003	0,005	0,003
D_HORBY	-0,039***	0,006	-0,042***	-0,158	-0,05***	0,011***	-0,052***	0,011**
	0,008	0,004	0,008	0,123	0,012	0,004	0,012	0,004
D_HUDDINGE	0,062**	-0,012**	0,073***	0,321**	0,091***	-0,004	0,093***	-0,004
	0,026	0,006	0,027	0,142	0,034	0,005	0,035	0,005
D_HUDIKSVALL	0,028***	-0,007*	0,018**	0,178**	0,004	-0,008*	0,003	-0,008*
	0,01	0,004	0,008	0,086	0,01	0,005	0,01	0,005
D_HULTSFRED	0,04***	-0,005	0,033**	0,131	0,044*	-0,011**	0,042*	-0,011**
	0,014	0,004	0,016	0,108	0,024	0,005	0,024	0,005
D_HYLTE	0,09***	0,001	0,083***	-0,013	0,074***	-0,004	0,072***	-0,004
	0,015	0,004	0,014	0,105	0,029	0,003	0,029	0,003
D_JARFALLA	0,066***	-0,017***	0,075***	0,445***	0,092***	-0,012**	0,094***	-0,012**
	0,028	0,005	0,032	0,12	0,034	0,006	0,035	0,006
D_JOKKMOKK	0,049***	-0,001	0,051***	0,03	0,059***	0,004	0,059***	0,004
	0,01	0,006	0,01	0,163	0,014	0,008	0,014	0,008
D_JONKOPING	0,067***	-0,002	0,068***	0,051	0,081***	0	0,081***	0

	0,008	0,005	0,008	0,138	0,011	0,008	0,011	0,008
D_KALIX	0,086***	-0,005*	0,084***	0,136**	0,076***	-0,002	0,075***	-0,002
	0,01	0,003	0,01	0,065	0,012	0,003	0,013	0,003
D_KALMAR	0,049***	-0,005	0,051***	0,137	0,075***	-0,007	0,075***	-0,007
	0,008	0,005	0,008	0,118	0,007	0,005	0,008	0,005
D_KARLSBORG	-0,041	-0,002	0,012	0,108	-0,002	-0,008*	0,004	-0,009**
	0,036	0,005	0,011	0,154	0,01	0,005	0,016	0,005
D_KARLSHAMN	0,041***	-0,007	0,04***	0,189	0,051***	-0,012	0,05***	-0,012
	0,011	0,006	0,011	0,143	0,013	0,009	0,013	0,009
D_KARLSKOGA	0,085***	-0,011***	0,082***	0,302***	0,099***	-0,014**	0,098***	-0,014**
	0,019	0,004	0,019	0,094	0,024	0,007	0,024	0,007
D_KARLSKRONA	0,005	-0,006	0,026***	0,169	0,018	-0,011	0,02	-0,011
	0,011	0,006	0,005	0,159	0,012	0,008	0,013	0,008
D_KARLSTAD	0,037***	-0,008**	0,041***	0,211**	0,068***	-0,011***	0,068***	-0,01***
	0,007	0,004	0,007	0,083	0,009	0,004	0,01	0,004
D_KATRINEHOLM	0,069***	-0,008*	0,066***	0,203*	0,061***	-0,013***	0,06***	-0,013***
	0,012	0,004	0,011	0,109	0,02	0,004	0,021	0,004
D_KAVLINGE	0,009	0,002	0,009	-0,053	-0,032*	0,005	-0,033*	0,005
	0,02	0,005	0,021	0,146	0,017	0,003	0,017	0,003
D_KIL	0,026***	-0,007*	0,027***	0,206**	-0,005	-0,013***	-0,006	-0,014***
	0,009	0,004	0,01	0,092	0,01	0,004	0,01	0,004
D_KINDA	0,02**	0	0,016**	0,006	-0,025*	-0,005	-0,027**	-0,005
	0,01	0,005	0,008	0,134	0,013	0,008	0,013	0,008
D_KIRUNA	0,1***	0,007	0,115***	-0,188	0,136***	0,017*	0,137***	0,017*
	0,022	0,008	0,019	0,215	0,026	0,01	0,026	0,01
D_KLIPPAN	-0,009	-0,006*	-0,015	0,168**	-0,031	-0,01**	-0,033*	-0,01**
	0,009	0,003	0,009	0,076	0,019	0,004	0,019	0,004
D_KNIVSTA	0,065*	-0,003	0,094	0,092	-0,017	-0,004	-0,014	-0,004
	0,04	0,004	0,059	0,106	0,036	0,005	0,035	0,005
D_KOPING	0,084***	-0,007	0,081***	0,18	0,105***	-0,011	0,105***	-0,011
	0,022	0,006	0,022	0,144	0,032	0,009	0,033	0,009
D_KRAMFORS	0,04***	-0,006*	0,038**	0,159**	0,044***	-0,011***	0,044***	-0,011***
	0,014	0,003	0,015	0,069	0,015	0,002	0,015	0,002
D_KRISTIANSTAD	0,04***	-0,005	0,04***	0,139*	0,038***	-0,007**	0,037***	-0,007**
	0,005	0,003	0,005	0,074	0,01	0,003	0,011	0,003
D_KRISTINEHAMN	0,041***	-0,012***	0,04***	0,317***	0,042***	-0,018***	0,042***	-0,018***
	0,011	0,004	0,011	0,08	0,012	0,003	0,012	0,003
D_KROKOM	0,033***	-0,004	0,037***	0,101	-0,02*	-0,001	-0,019*	-0,001
	0,008	0,004	0,01	0,101	0,01	0,004	0,01	0,004
D_KUMLA	0,012	-0,008	0,021**	0,201	-0,025	-0,001	-0,025	-0,001
	0,01	0,006	0,01	0,143	0,017	0,008	0,017	0,008
D_KUNGALV	0,079***	-0,005*	0,075***	0,143*	0,063***	-0,004	0,062***	-0,004
	0,018	0,003	0,017	0,075	0,018	0,004	0,018	0
D_KUNGSBACKA	0,105***	-0,002	0,1***	0,055	0,066**	-0,003	0,065**	-0,003
	0,032	0,006	0,03	0,15	0,026	0,008	0,026	0,008
D_KUNGSOR	0,077***	-0,006	0,076***	0,144	0,074***	-0,014**	0,074***	-0,014*

	0,016	0,006	0,016	0,144	0,026	0,007	0,026	0,007
D_LAHOLM	0,02***	0,003	0,013**	-0,09	0	-0,002	-0,002	-0,002
	0,007	0,005	0,006	0,131	0,014	0,007	0,014	0,007
D_LANDSKRONA	0,03*	-0,009**	0,027*	0,236**	0,042	-0,01*	0,042	-0,01*
	0,017	0,005	0,016	0,104	0,033	0,006	0,034	0,006
D_LAXA	0,069***	-0,005	0,066***	0,136	0,084***	-0,01*	0,083***	-0,01
	0,021	0,004	0,022	0,1	0,03	0,006	0,03	0,006
D_LEKEBERG	0,017**	-0,009**	0,016**	0,246**	-0,02*	-0,01**	-0,02*	-0,01**
	0,008	0,004	0,008	0,095	0,011	0,005	0,011	0,005
D_LEKSAND	0,023***	0,004	0,019***	-0,102	0,019*	0	0,019**	0
	0,005	0,004	0,006	0,118	0,01	0,006	0,01	0,006
D_LERUM	0,086***	-0,006	0,083***	0,149	0,038	-0,005	0,038	-0,005
	0,029	0,004	0,029	0,1	0,023	0,006	0,023	0,006
D_LESSEBO	0,065***	-0,01	0,061***	0,266*	0,043*	-0,017***	0,042*	-0,017***
	0,013	0,006	0,012	0,161	0,025	0,005	0,025	0,005
D_LIDINGO	0,091	-0,007	0,097	0,18	0,118**	-0,006	0,12**	-0,006
	0,056	0,008	0,062	0,198	0,056	0,01	0,057	0,01
D_LIDKOPING	0,035***	-0,004	0,039***	0,105	0,031***	-0,008	0,03***	-0,008
	0,006	0,005	0,006	0,127	0,01	0,007	0,01	0,007
D_LILLA_EDET	0,084***	-0,006*	0,08***	0,167*	0,095***	-0,013***	0,094***	-0,013***
	0,021	0,004	0,021	0,09	0,027	0,004	0,027	0,004
D_LINDESBERG	0,041***	-0,004	0,042***	0,097	0,043*	-0,005	0,043*	-0,005
	0,015	0,008	0,015	0,202	0,023	0,014	0,023	0,014
D_LINKOPING	0,031***	-0,01**	0,044***	0,26***	0,054***	-0,008**	0,053***	-0,008***
	0,011	0,004	0,013	0,094	0,016	0,004	0,016	0,004
D_LJUNGBY	0,07***	-0,005	0,062***	0,119	0,065***	-0,006	0,063***	-0,006
	0,012	0,006	0,011	0,155	0,022	0,009	0,022	0,009
D_LJUSDAL	0,021	-0,009	0,012	0,248	-0,01	-0,007	-0,013	-0,007
	0,015	0,006	0,016	0,152	0,019	0,006	0,018	0,006
D_LJUSNARSBERG	0,02	-0,012**	0,019	0,309***	0,025	-0,011	0,023	-0,012
	0,016	0,005	0,016	0,114	0,026	0,008	0,027	0,008
D_LOMMA	0,064	0,002	0,065	-0,044	0,012	0,009	0,012	0,009
	0,046	0,006	0,048	0,156	0,036	0,007	0,036	0,007
D_LUDVIKA	0,058***	-0,005**	0,052***	0,128**	0,067***	-0,003	0,066***	-0,003
	0,013	0,002	0,013	0,053	0,018	0,002	0,017	0,002
D_LULEA	0,055***	-0,006	0,079***	0,161	0,096***	-0,006	0,097***	-0,006
	0,018	0,005	0,007	0,128	0,01	0,006	0,011	0,006
D_LUND	0,038	-0,003	0,052**	0,073	0,108***	0,001	0,107***	0
	0,023	0,003	0,024	0,081	0,031	0,004	0,031	0,004
D_LYCKSELE	0,057***	-0,004	0,049***	0,113	0,041***	0,005	0,039***	0,005
	0,008	0,007	0,006	0,172	0,012	0,008	0,012	0,007
D_LYSEKIL	0,063***	-0,003	0,061***	0,086	0,073***	-0,011**	0,072***	-0,011**
	0,012	0,005	0,013	0,136	0,015	0,005	0,015	0,004
D_MALA	0,073***	-0,007	0,067***	0,176	0,049***	-0,001	0,048***	-0,001
	0,012	0,007	0,012	0,191	0,016	0,009	0,016	0,009
D_MALMO	0,043**	-0,008**	0,042**	0,209**	0,099***	-0,008**	0,099***	-0,008**

	0,017	0,004	0,017	0,099	0,022	0,003	0,022	0,003
D_MALUNG_SALEN	0,013	-0,003	0,005	0,086	0,005	0,002	0,002	0,002
	0,012	0,004	0,016	0,106	0,02	0,003	0,019	0,003
D_MARIESTAD	0,035***	-0,006	0,041***	0,163	0,034**	-0,014***	0,035**	-0,014***
	0,008	0,004	0,008	0,106	0,014	0,005	0,014	0,005
D_MARK	0,045***	-0,003	0,041***	0,071	0,018	-0,005	0,017	-0,005
	0,01	0,004	0,009	0,087	0,018	0,004	0,018	0,004
D_MARKARYD	0,045***	-0,011*	0,037**	0,28**	0,03	-0,019***	0,028	-0,019***
	0,016	0,006	0,015	0,137	0,031	0,005	0,031	0,005
D_MELLERUD	0,034**	-0,016**	0,028**	0,431**	0,017	-0,017	0,015	-0,017
	0,014	0,008	0,012	0,173	0,027	0,011	0,027	0,011
D_MJOLBY	0,025**	-0,007	0,025***	0,19	-0,004	-0,007	-0,005	-0,007
	0,01	0,005	0,01	0,116	0,014	0,008	0,015	0,007
D_MOLNDAL	0,107***	-0,008*	0,103***	0,204*	0,108***	-0,005	0,107***	-0,006
	0,025	0,005	0,023	0,112	0,023	0,006	0,023	0,006
D_MONSTERAS	0,047***	0	0,039***	0,007	0,039*	-0,004	0,037*	-0,004
	0,012	0,005	0,012	0,134	0,02	0,009	0,02	0,009
D_MORA	0,038***	-0,004	0,031***	0,097	0,035***	-0,01**	0,032***	-0,01**
	0,008	0,005	0,012	0,12	0,011	0,004	0,01	0,004
D_MORBYLANGA	0,026***	0	0,023***	-0,004	-0,012*	-0,003	-0,012**	-0,003
	0,008	0,003	0,007	0,094	0,007	0,006	0,006	0,006
D_MOTALA	0,056***	-0,013***	0,053***	0,358***	0,038**	-0,016***	0,037**	-0,016***
	0,011	0,003	0,011	0,067	0,015	0,004	0,015	0,004
D_MULLSJO	0,051***	0,001	0,045***	-0,019	0,023	-0,01	0,022	-0,01
	0,008	0,007	0,008	0,192	0,016	0,009	0,016	0,009
D_MUNKEDAL	0,039***	-0,006	0,034**	0,151	0,018	-0,012**	0,017	-0,012**
	0,013	0,004	0,014	0,105	0,021	0,005	0,021	0,005
D_MUNKFORS	0,017	-0,013*	0,008	0,356**	-0,001	-0,02***	-0,004	-0,02**
	0,02	0,007	0,021	0,177	0,025	0,008	0,025	0,008
D_NACKA	0,045	-0,004	0,052	0,098	0,06	0,004	0,062	0,004
	0,039	0,008	0,044	0,225	0,037	0,01	0,038	0,01
D_NASSJO	0,042***	-0,002	0,044***	0,043	0,039*	-0,005	0,038*	-0,005
	0,012	0,005	0,012	0,139	0,021	0,007	0,022	0,007
D_NORA	0,046***	-0,002	0,045***	0,054	0,038**	-0,01	0,038**	-0,011
	0,012	0,006	0,013	0,168	0,018	0,01	0,018	0,01
D_NORBERG	0,057***	-0,004	0,059***	0,113	0,069**	-0,008	0,07**	-0,007
	0,02	0,006	0,02	0,138	0,028	0,008	0,028	0,008
D_NORDANSTIG	0,019	-0,007	0,01	0,181	-0,012	-0,009	-0,013	-0,009
	0,014	0,007	0,017	0,19	0,019	0,006	0,019	0,006
D_NORDMALING	0,04***	0	0,039***	0,006	0,033**	-0,002	0,031**	-0,003
	0,008	0,007	0,009	0,177	0,016	0,011	0,016	0,011
D_NORRKOPING	0,061***	-0,009***	0,067***	0,241***	0,071***	-0,009**	0,071***	-0,01**
	0,01	0,003	0,01	0,061	0,015	0,004	0,015	0,004
D_NORRTALJE	-0,039***	-0,005*	-0,032***	0,124**	-0,028	-0,004	-0,028	-0,004*
	0,013	0,003	0,011	0,059	0,018	0,003	0,018	0,003
D_NORSJO	0,067***	0,004	0,057***	-0,097	0,031	0,005	0,029	0,005

	0,015	0,011	0,015	0,3	0,024	0,011	0,023	0,011
D_NYBRO	0,039***	-0,006	0,032**	0,152	0,04*	-0,017**	0,039*	-0,017**
	0,013	0,007	0,014	0,177	0,021	0,008	0,021	0,007
D_NYKOPING	0,07***	-0,007*	0,073***	0,188*	0,066***	-0,008	0,067***	-0,008
	0,01	0,004	0,01	0,098	0,014	0,005	0,014	0,005
D_NYKVARN	0,029	-0,007	0,034	0,173	0,004	-0,001	0,006	-0,002
	0,027	0,005	0,029	0,121	0,036	0,008	0,038	0,008
D_NYNASHAMN	-0,021	-0,01**	-0,01	0,277***	-0,011	-0,006	-0,009	-0,006
	0,019	0,004	0,017	0,09	0,022	0,004	0,023	0,004
D_OCKELBO	0,025*	0	0,019	0,013	0,037*	-0,004	0,036*	-0,004
	0,013	0,007	0,016	0,177	0,02	0,008	0,02	0,008
D_OCKERO	0,046**	0	0,045**	-0,006	0,014	-0,008	0,013	-0,008
	0,019	0,006	0,018	0,154	0,02	0,008	0,02	0,008
D_ODESHOG	0,03***	-0,001	0,021**	0,046	-0,007	-0,011**	-0,009	-0,011**
	0,01	0,005	0,01	0,127	0,018	0,005	0,018	0,005
D_OLOFSTROM	0,091***	-0,005	0,089***	0,135	0,117***	-0,014	0,117***	-0,014
	0,029	0,011	0,029	0,289	0,04	0,018	0,04	0,019
D_OREBRO	0,042***	-0,006	0,053***	0,161*	0,064***	-0,007	0,065***	-0,007
	0,008	0,004	0,007	0,095	0,01	0,005	0,01	0,005
D_ORKELLJUNGA	-0,036***	-0,006	-0,043***	0,163	-0,073***	-0,013**	-0,075***	-0,013**
	0,01	0,005	0,008	0,109	0,021	0,006	0,021	0,006
D_ORNSKOLDSVIK	0,055***	-0,001	0,044***	0,019	0,044***	-0,004	0,042***	-0,004
	0,01	0,003	0,007	0,09	0,006	0,005	0,006	0,005
D_ORSA	-0,004	-0,004	-0,016	0,095	-0,026	-0,002	-0,029*	-0,002
	0,012	0,006	0,013	0,152	0,018	0,007	0,017	0,007
D_ORUST	0,041***	0,006	0,034**	-0,167	0,053***	0,001	0,051***	0,001
	0,012	0,007	0,013	0,2	0,019	0,01	0,019	0,01
D_OSBY	0,044***	-0,005	0,034***	0,14	0,02	-0,009*	0,018	-0,009*
	0,01	0,004	0,008	0,102	0,019	0,005	0,019	0,005
D_OSKARSHAMN	0,078***	-0,003	0,069***	0,076	0,081***	-0,005	0,079***	-0,005
	0,017	0,004	0,016	0,095	0,023	0,006	0,023	0,006
D_OSTERSUND	0,044***	-0,011***	0,059***	0,29***	0,056***	-0,008**	0,058***	-0,008**
	0,014	0,004	0,008	0,079	0,013	0,004	0,014	0,004
D_OSTHAMMAR	0,052***	-0,003	0,052***	0,09	0,051**	-0,006	0,049*	-0,006
	0,018	0,006	0,018	0,146	0,025	0,008	0,025	0,008
D_OSTRA_GOINGE	0,023***	-0,005	0,016*	0,143	0,006	-0,016	0,004	-0,017
	0,01	0,008	0,009	0,215	0,019	0,012	0,019	0,012
D_OVANAKER	0,009	-0,006	-0,002	0,157	-0,015	-0,015**	-0,017	-0,015**
	0,012	0,005	0,014	0,126	0,017	0,007	0,017	0,007
D_OVERKALIX	0,057***	-0,005	0,051***	0,132	0,046**	0,002	0,044**	0,002
	0,013	0,006	0,014	0,145	0,021	0,006	0,021	0,006
D_OVERTORNEA	0,095***	-0,001	0,091***	0,033	0,087**	-0,001	0,087**	-0,001
	0,02	0,006	0,019	0,161	0,04	0,01	0,04	0,01
D_OXELOSUND	0,113***	-0,007	0,112***	0,18	0,145***	-0,014	0,145***	-0,014
	0,027	0,008	0,027	0,188	0,035	0,011	0,036	0,011
D_PAJALA	0,07***	-0,002	0,063***	0,046	0,031	0,001	0,03	0

	0,015	0,004	0,013	0,104	0,028	0,005	0,028	0,005
D_PARTILLE	0,101***	-0,01	0,1***	0,262	0,082***	-0,013	0,083***	-0,013
	0,031	0,007	0,031	0,166	0,027	0,009	0,027	0,009
D_PERSTORP	0,038**	-0,017**	0,031*	0,442***	0,017	-0,021***	0,015	-0,021***
	0,02	0,008	0,018	0,163	0,033	0,008	0,033	0,008
D_PITEA	0,067***	-0,004	0,061***	0,115	0,054***	-0,007**	0,052***	-0,007*
	0,007	0,004	0,007	0,091	0,005	0,004	0,004	0,004
D_RAGUNDA	0,052***	-0,009	0,044***	0,235*	0,03	-0,007	0,029	-0,007
	0,012	0,006	0,013	0,129	0,022	0,008	0,022	0,008
D_RATTVIK	0	-0,001	-0,008	0,031	-0,022*	-0,006	-0,024*	-0,006
	0,008	0,005	0,009	0,129	0,013	0,006	0,013	0,005
D_ROBERTSFORS	0,043***	0,001	0,04***	-0,034	0,026*	-0,001	0,024*	-0,001
	0,007	0,005	0,007	0,148	0,014	0,004	0,014	0,004
D_RONNEBY	0,02	-0,004	0,032***	0,081	0,044***	-0,009	0,045***	-0,008
	0,015	0,006	0,011	0,142	0,012	0,01	0,012	0,01
D_SAFFLE	0,023***	-0,012***	0,015	0,328***	-0,01	-0,017***	-0,011	-0,017***
	0,013	0,004	0,012	0,089	0,017	0,004	0,017	0,004
D_SALA	0,035***	-0,004*	0,037***	0,115*	0,035**	-0,005	0,036**	-0,004
	0,012	0,003	0,012	0,066	0,014	0,005	0,014	0,005
D_SALEM	0,044	-0,01	0,053	0,261	0,02	0,002	0,022	0,002
	0,029	0,007	0,034	0,188	0,032	0,007	0,034	0,007
D_SANDVIKEN	0,054***	-0,008	0,048***	0,218	0,059***	-0,017	0,058***	-0,017
	0,02	0,008	0,02	0,209	0,022	0,011	0,022	0,011
D_SATER	0,027***	-0,001	0,025***	0,016	0,027*	0	0,027*	0
	0,01	0,004	0,011	0,092	0,015	0,004	0,015	0,004
D_SAVSJO	0,036***	0,003	0,027**	-0,07	0,005	-0,001	0,002	-0,001
	0,013	0,006	0,011	0,163	0,026	0,009	0,026	0,009
D_SIGTUNA	0,047*	-0,019***	0,058**	0,508***	0,08**	-0,014***	0,081**	-0,014***
	0,028	0,006	0,028	0,112	0,039	0,005	0,039	0,005
D_SIMRISHAMN	0,006	0,002	-0,002	-0,068	-0,01	-0,002	-0,011	-0,002
	0,009	0,004	0,007	0,109	0,013	0,003	0,013	0,003
D_SJOBO	-0,037***	0,008***	-0,039***	-0,227**	-0,041***	0,008	-0,043***	0,008
	0,012	0,003	0,012	0,105	0,014	0,006	0,015	0,006
D_SKARA	0,047***	-0,007	0,048***	0,181	0,046***	-0,012**	0,045***	-0,012***
	0,007	0,005	0,007	0,112	0,012	0,005	0,012	0,004
D_SKELLEFTEA	0,062***	-0,004	0,052***	0,108	0,047***	-0,002	0,045***	-0,002
	0,008	0,004	0,004	0,105	0,006	0,002	0,004	0,002
D_SKINNSKATTEBERG	0,081***	-0,003	0,08***	0,086	0,113***	-0,005	0,112***	-0,006
	0,018	0,005	0,019	0,12	0,03	0,009	0,031	0,009
D_SKOVDE	0,044***	-0,005	0,056***	0,137	0,07***	-0,007	0,071***	-0,007
	0,012	0,006	0,01	0,134	0,013	0,008	0,012	0,008
D_SKURUP	-0,006	-0,001	-0,009	0,024	-0,036***	-0,005	-0,037***	-0,005
	0,007	0,004	0,006	0,108	0,012	0,005	0,012	0,005
D_SMEDJEBACKEN	0,068***	-0,006	0,063***	0,152	0,085***	-0,011***	0,085***	-0,011***
	0,022	0,005	0,023	0,115	0,024	0,004	0,024	0,004
D_SODERHAMN	0,016	-0,012***	0,02	0,326***	0,007	-0,009***	0,007	-0,009**

	0,014	0,003	0,014	0,073	0,015	0,004	0,015	0,004
D_SODERKOPING	0,037***	-0,002	0,036***	0,043	0,004	-0,01***	0,004	-0,011***
	0,009	0,005	0,009	0,132	0,012	0,003	0,011	0,003
D_SODERTALJE	0,068**	-0,015***	0,071**	0,411***	0,113**	-0,014*	0,114**	-0,014*
	0,032	0,005	0,032	0,123	0,051	0,009	0,052	0,009
D_SOLLEFTEA	0,031**	-0,008	0,037***	0,215*	0,032**	-0,006	0,031**	-0,006
	0,012	0,005	0,011	0,112	0,013	0,005	0,013	0,005
D_SOLLENTUNA	0,062	-0,009	0,072	0,259	0,069*	0	0,071*	0
	0,04	0,007	0,046	0,175	0,039	0,007	0,04	0,006
D_SOLNA	-0,012	-0,004	0,006	0,091	0,116***	0,005	0,117***	0,005
	0,024	0,006	0,021	0,152	0,027	0,004	0,027	0,004
D_SOLVESBORG	0,047***	-0,007	0,039***	0,176	0,038**	-0,007	0,036**	-0,007
	0,013	0,006	0,012	0,137	0,018	0,008	0,018	0,008
D_SORSELE	0,043***	-0,006	0,037***	0,158	0,016	0	0,016	0,001
	0,012	0,009	0,012	0,22	0,02	0,009	0,02	0,009
D_SOTENAS	0,052***	-0,001	0,045***	0,038	0,061***	-0,005	0,061***	-0,005
	0,011	0,007	0,01	0,182	0,016	0,012	0,017	0,012
D_STAFFANSTORP	0,042*	-0,007*	0,045	0,196*	-0,011	-0,002	-0,01	-0,002
	0,025	0,004	0,029	0,11	0,018	0,005	0,018	0,005
D_STENUNGSUND	0,077***	-0,001	0,072***	0,014	0,062***	-0,005	0,061***	-0,005
	0,019	0,005	0,019	0,142	0,02	0,008	0,02	0,008
D_STOCKHOLM	0,015	-0,009	0,024	0,231	0,097***	-0,002	0,098***	-0,002
	0,026	0,006	0,027	0,156	0,03	0,004	0,03	0,005
D_STORFORS	0,069***	-0,008*	0,065***	0,222*	0,08***	-0,015**	0,078***	-0,015**
	0,021	0,005	0,02	0,122	0,029	0,006	0,029	0,006
D_STORUMAN	0,025***	-0,001	0,023**	0,027	0,013	0,005	0,012	0,005
	0,01	0,004	0,011	0,107	0,016	0,007	0,016	0,007
D_STRANGNAS	0,067***	-0,004	0,077***	0,109	0,066***	-0,002	0,067***	-0,002
	0,013	0,004	0,017	0,097	0,016	0,006	0,017	0,006
D_STROMSTAD	0,047***	-0,012*	0,047***	0,311*	0,063**	-0,012	0,063**	-0,012
	0,014	0,007	0,014	0,171	0,026	0,009	0,026	0,009
D_STROMSUND	0,035***	-0,007	0,028**	0,177	0,019	-0,008	0,017	-0,008
	0,01	0,006	0,011	0,142	0,016	0,009	0,016	0,009
D_SUNDBYBERG	0,05**	-0,019**	0,062***	0,519**	0,138***	-0,011	0,14***	-0,012
	0,023	0,008	0,022	0,206	0,022	0,007	0,022	0,008
D_SUNDSVALL	0,059***	-0,01**	0,072***	0,278***	0,082***	-0,011***	0,084***	-0,011***
	0,015	0,004	0,012	0,105	0,009	0,004	0,008	0,004
D_SUNNE	-0,006	-0,001	-0,013	0,024	-0,035**	-0,002	-0,036**	-0,003
	0,01	0,004	0,011	0,111	0,014	0,006	0,014	0,006
D_SURAHAMMAR	0,124***	-0,012***	0,126***	0,305***	0,137***	-0,012**	0,137***	-0,012**
	0,024	0,004	0,024	0,09	0,038	0,006	0,038	0,006
D_SVALOV	0,002	0	-0,001	-0,007	-0,017	0,002	-0,019	0,002
	0,007	0,006	0,006	0,146	0,015	0,006	0,014	0,006
D_SVEDALA	0,039***	-0,001	0,038***	0,022	-0,001	0,001	-0,001	0,001
	0,014	0,004	0,014	0,109	0,012	0,003	0,012	0,003
D_SVENLJUNGA	0,036***	-0,001	0,029**	0,017	0,018	-0,004	0,016	-0,004

	0,014	0,008	0,014	0,22	0,03	0,013	0,03	0,013
D_TABY	0,062	-0,012*	0,072	0,326*	0,065	-0,008	0,066	-0,006
	0,048	0,007	0,056	0,175	0,048	0,006	0,049	0,007
D_TANUM	0,026***	0,001	0,017*	-0,037	0,018	-0,008	0,016	-0,008
	0,009	0,007	0,01	0,183	0,015	0,008	0,015	0,008
D_TIBRO	0,03***	-0,01*	0,03**	0,268*	0,006	-0,018**	0,006	-0,018**
	0,012	0,006	0,012	0,152	0,023	0,008	0,023	0,008
D_TIDAHOLM	0,003	-0,003	0,01	0,082	-0,004	0	-0,004	0
	0,014	0,008	0,013	0,214	0,022	0,014	0,021	0,014
D_TIERP	-0,005	-0,002	-0,004	0,061	-0,029	-0,006	-0,031*	-0,006
	0,013	0,005	0,013	0,129	0,018	0,006	0,018	0,006
D_TIMRA	0,057***	-0,012***	0,061***	0,32***	0,042***	-0,014***	0,043**	-0,014**
	0,016	0,004	0,015	0,08	0,016	0,005	0,017	0,005
D_TINGSRYD	0,033***	-0,005	0,026***	0,123	0,015	-0,012***	0,013	-0,012***
	0,011	0,004	0,01	0,112	0,021	0,004	0,021	0,004
D_TJORN	0,063***	0,003	0,056***	-0,079	0,072***	-0,007**	0,071***	-0,007**
	0,016	0,005	0,016	0,13	0,016	0,004	0,016	0,003
D_TOMELILLA	-0,006	0,002	-0,014	-0,057	-0,028	-0,001	-0,03*	-0,001
	0,01	0,003	0,013	0,084	0,017	0,003	0,017	0,004
D_TOREBODA	-0,012	-0,001	-0,016	0,03	-0,032*	-0,006	-0,033**	-0,006
	0,011	0,005	0,012	0,123	0,017	0,007	0,017	0,007
D_TORSAS	0,011	-0,001	0,003	0,029	-0,007	-0,013*	-0,01	-0,013*
	0,01	0,006	0,011	0,157	0,019	0,007	0,018	0,007
D_TORSBY	0,003	-0,004	-0,006	0,112	-0,009	-0,001	-0,011	-0,001
	0,015	0,007	0,017	0,17	0,021	0,006	0,02	0,006
D_TRANAS	0,044***	-0,006	0,037***	0,156	0,01	-0,007	0,008	-0,007
	0,012	0,006	0,01	0,132	0,019	0,008	0,019	0,008
D_TRANEMO	0,067***	-0,005	0,059***	0,127	0,044	-0,014	0,043	-0,013
	0,019	0,007	0,017	0,188	0,03	0,01	0,03	0,01
D_TRELLEBORG	0,017*	-0,004	0,017*	0,098	0,011	-0,001	0,01	-0,001
	0,01	0,004	0,01	0,1	0,019	0,004	0,019	0,004
D_TROLLHATTAN	0,087***	-0,019***	0,086***	0,494***	0,09***	-0,022***	0,089***	-0,022***
	0,02	0,007	0,019	0,135	0,024	0,007	0,024	0,007
D_TROSA	0,102***	-0,004	0,106***	0,098	0,097***	-0,005	0,096***	-0,005
	0,02	0,006	0,022	0,152	0,023	0,004	0,024	0,005
D_TYRESO	0,036	-0,01	0,046	0,251	0,033	-0,005	0,035	-0,005
	0,027	0,007	0,032	0,172	0,032	0,005	0,034	0,005
D_UDDEVALLA	0,063***	-0,009*	0,061***	0,245***	0,055***	-0,01**	0,055***	-0,01***
	0,009	0,004	0,009	0,089	0,012	0,005	0,012	0,004
D_ULRICEHAMN	0,04***	-0,003	0,031***	0,087	0,007	-0,006	0,006	-0,006
	0,012	0,003	0,008	0,084	0,015	0,004	0,015	0,004
D_UMEA	0,039*	-0,003	0,06***	0,077	0,098***	-0,001	0,097***	-0,001
	0,02	0,006	0,014	0,148	0,021	0,004	0,021	0,004
D_UPPLANDS_BRO	0,026	-0,01*	0,039*	0,294**	0,047	-0,002	0,047	-0,003
	0,022	0,006	0,021	0,147	0,031	0,005	0,03	0,007
D_UPPLANDS_VASBY	0,067***	-0,017***	0,076**	0,454***	0,103***	-0,013**	0,105***	-0,014**

	0,029	0,006	0,031	0,127	0,038	0,006	0,039	0,006
D_UPPSALA	0,041***	-0,01**	0,073***	0,258**	0,109***	-0,008	0,109***	-0,008
	0,018	0,004	0,014	0,104	0,016	0,005	0,015	0,005
D_UPPVIDINGE	0,066***	-0,003	0,058***	0,076	0,056**	-0,009	0,053*	-0,009
	0,015	0,007	0,014	0,171	0,028	0,01	0,028	0,01
D_VADSTENA	0,049***	-0,008**	0,044***	0,221**	0,027***	-0,011*	0,026***	-0,011**
	0,012	0,004	0,01	0,087	0,009	0,006	0,009	0,006
D_VAGGERYD	0,064***	0,001	0,06***	-0,022	0,041	-0,002	0,039	-0,002
	0,015	0,007	0,014	0,2	0,027	0,012	0,027	0,012
D_VALLENTUNA	-0,014	-0,004	-0,004	0,109	-0,037	0,002	-0,035	0,002
	0,024	0,007	0,03	0,177	0,026	0,005	0,027	0,005
D_VANERSBORG	0,073***	-0,013**	0,078***	0,346***	0,067***	-0,022***	0,067***	-0,022***
	0,01	0,005	0,01	0,122	0,014	0,005	0,014	0,005
D_VANNAS	0,038***	-0,003	0,046***	0,082	0,008	0	0,007	0
	0,007	0,007	0,01	0,168	0,011	0,006	0,011	0,006
D_VANSBRO	0,01	-0,008	-0,001	0,215*	-0,034	-0,007	-0,037*	-0,007
	0,014	0,006	0,016	0,129	0,022	0,005	0,021	0,005
D_VARA	0,016	0,002	0,009	-0,048	0	-0,002	-0,002	-0,002
	0,012	0,006	0,014	0,156	0,02	0,009	0,019	0,009
D_VARBERG	0,045***	0,003	0,036***	-0,072	0,021**	0	0,019**	0
	0,011	0,004	0,006	0,118	0,01	0,006	0,01	0,006
D_VARGARDA	0,051***	-0,01**	0,043***	0,267***	0,011	-0,009	0,009	-0,009
	0,012	0,004	0,01	0,099	0,017	0,006	0,017	0,006
D_VARMDO	0,013	-0,002	0,021	0,061	0,004	0,005	0,006	0,005
	0,024	0,008	0,028	0,204	0,029	0,005	0,031	0,005
D_VARNAMO	0,095***	-0,005	0,09***	0,135	0,098***	-0,007	0,096***	-0,007
	0,021	0,008	0,02	0,205	0,032	0,012	0,032	0,012
D_VASTERAS	0,081***	-0,008**	0,079***	0,201***	0,099***	-0,007**	0,099***	-0,007**
	0,018	0,003	0,018	0,071	0,018	0,003	0,018	0,003
D_VASTERVIK	0,021***	-0,006	0,019***	0,153	0,012	-0,011*	0,012	-0,011*
	0,006	0,004	0,007	0,094	0,012	0,006	0,012	0,006
D_VAXHOLM	0,017	0,007	0,033	-0,189	0,015	0,011	0,017	0,011
	0,029	0,008	0,037	0,203	0,03	0,009	0,031	0,009
D_VAXJO	0,062***	-0,007	0,062***	0,191*	0,07***	-0,008	0,069***	-0,008
	0,008	0,005	0,008	0,111	0,009	0,005	0,01	0,005
D_VELLINGE	0,051	-0,008	0,046	0,21	0,007	-0,005	0,007	-0,005
	0,039	0,007	0,039	0,189	0,033	0,008	0,033	0,008
D_VETLANDA	0,051***	-0,001	0,044***	0,014	0,037	-0,008	0,034	-0,008
	0,013	0,007	0,012	0,193	0,023	0,01	0,023	0,011
D_VILHELMINA	0,028**	-0,008	0,023	0,224	-0,021	0	-0,023	0
	0,012	0,007	0,013	0,155	0,018	0,006	0,018	0,006
D_VIMMERBY	0,038***	-0,001	0,032***	0,023	0,028*	-0,01**	0,026*	-0,009**
	0,01	0,005	0,011	0,129	0,016	0,004	0,016	0,004
D_VINDELN	0,041***	-0,002	0,041***	0,055	0,025	0,002	0,022	0,002
	0,011	0,007	0,012	0,169	0,02	0,009	0,019	0,008
D_VINGAKER	0,056***	-0,005	0,05***	0,122	0,031	-0,008	0,029	-0,008

	0,009	0,005	0,008	0,122	0,02	0,008	0,019	0,008
D_YDRE	0,033***	0,003	0,026***	-0,082	0,002	-0,007*	0	-0,007*
	0,009	0,006	0,008	0,152	0,012	0,004	0,012	0,004

Table (8). Results of time dummies with GMM

Variable	NIGHT GOV	DAY GOV	NIGHT PAM	DAY PAM
D_2004	0,027***	0,029***		
	0,002	0,001		
D_2005	0,003	0,008**		
	0,003	0,003		
D_2006	0,013***	0,021***		
	0,004	0,003		
D_2007	0,031***	0,037***		
	0,004	0,004		
D_2008	-0,002	0,004	-0,042***	-0,045***
	0,004	0,004	0,008	0,006
D_2009	-0,018***	-0,013***	-0,025**	-0,02**
	0,003	0,003	0,011	0,009
D_2010	-0,022***	-0,019***	-0,024**	-0,019**
	0,003	0,003	0,011	0,01