Department of economics
NEKN01 Master essay 1
Author: Sara Lundin
Supervisors: Carl Hampus Lyttkens and Anna Welander

Could a municipal reform lead to cost savings?

An essay on the relationship between population size and municipal costs

Abstract
The essay estimates the relation between population size and municipal costs. Whether the efficiency in service provision in municipalities is depending on population size is discussed in Sweden as well as other countries. The relation is measured using two measures for total costs and two measures for "fixed costs" associated with having an additional decision level. The result give some support for a negative relation between costs and population size, but is sensitive to the cost measure and model specification. Whether the municipality is located in a rural or urban region is of importance for the results, which highlights the need of looking beyond population size in the discussion on municipal amalgamations.

Table of Content

1. Introduction

What is the optimal size of a municipality? Are there too many municipalities in Sweden? Could a municipality reform lead to cost savings? Those questions are part of an on-going discussion in Sweden. Politicians and representatives from unions as well as freestanding debaters have argued for a new municipality reform in Sweden with fewer and larger jurisdictions (Dagens Nyheter 2015-07-21). Proponents of a reform bring up cost savings as an argument for municipal amalgamations. According to these arguments, a larger population size will increase efficiency by taking advantage of economies of scale, internalization of externalities and a higher degree of specialization. Preference matching and local variation on the other hand speak in favour of small municipalities (SNS 2015a).

The discussion is not unique for Sweden. It exists in many developed as well as developing countries, although the responsibilities and provision levels of the municipalities may differ between countries. A review of previous international research, estimating the effect of population size on cost, presents mixed results of both economies of scale, diseconomies of scale and nonlinear relationships. In the literature, economists have theoretical arguments for smaller as well as larger jurisdictions, similar to the discussion of centralization versus decentralization.

The aim of this essay is to investigate whether population size has any explanatory power for the cost differences between Swedish municipalities. Previous comparisons between Swedish municipalities have found higher costs for small municipalities. Sundström and Tingvall (2006) divides the small municipalities (<10 000 inhabitants) into five subgroups and find generally higher costs for small municipalities than the remaining, but lower costs for small municipalities close to a city. Their study is based on descriptive statistics, which makes it difficult to sort out the effect of other factors than size. Another study by Berggren et al (2006) is based on regression analysis in order to control for underlying factors. That study found no statistically significant evidence for an effect of population size on municipal costs.

An advantage for the current essay in comparison to the above studies is the use of panel data, making it possible to compare the results of an ordinary least squares model (OLS) with a

model using fixed effects. By using fixed effects, time invariant characteristics for each municipality will be sorted out (Verbeck 2012).

The effect of population size is tested on four dependent variables: Total costs, Deviation from Standard Cost, Cost of Political Activity and Administration Intensity. The regression results present some evidence for a negative relation between population size and total costs in both the OLS model and the fixed effects model. A relation between population size and standard cost is significant in the OLS model only and then only for rural municipalities. Regression analysis with Cost of political activity and Administrative intensity as dependent variables, which may represent fixed cost of another decision level, presents weak evidence for an effect of population size.

2. **Background**

Organisation

The municipality (kommunen) is the local government and the smallest of Sweden's three governance levels; followed by the county (landstinget) and the central government (staten). The local government is responsible for about two thirds of the welfare services in Sweden. The amount of welfare services undertaken by the municipalities in Sweden and other Nordic countries, are the highest in the world. However, the municipal responsibilities are supervised and regulated by the central government (Söderström 1991). A number of instruments are being used to control and supervise the municipal level, including agreements and information as well as laws and regulations (Feltenius 2012; SOU 2007:10). The municipalities are obliged to supply a range of services. Among these are elderly care, education, childcare and waste disposal. The municipalities are also able to supply other services such as housing and culture activities, even though these services are not obligated (Sundström & Tingvall 2006).

Since each municipality in Sweden has a considerable responsibility for welfare services, it has been questioned whether small municipalities are capable of providing these services

efficiently. There are 290 municipalities in Sweden. 77 of them inhabit less than 10 000 persons and 47 of them inhabit less than 8000 (2013). There have previously been several municipality reforms in order to reduce the number of municipalities. The last large amalgamation reform started 1962 and ended 1971. The number of municipalities was then to be reduced from 848 to 282. Part from a few changes, the division after the reform 1962-1971 is still valid. The main objective of the reform was threefold:

- Higher efficiency in terms of cost-minimization of public services.
- Local democracy - the inhabitants should have a good chance to influence the political decision making in their municipality.
- Local self-government. The regions should be large enough to decide and implement local political policies.

8000 inhabitants were considered the minimum population size to accomplish the goals. The local self-government is an important feature of Swedish democracy and stated in the 1974 constitution (Gustafsson 1980).

Today, 16 per cent of the municipalities are populated by less than 8000 inhabitants, and there is a strong urbanisation trend in Sweden, which is particularly hurting municipalities with already small population size and low population density (SNS 2015a). Moreover is an ageing population putting pressure on the welfare state - a smaller working population must finance more services to elderly. This is pointed out as an especially difficult task for the small municipalities, mainly because small municipalities are more affected by these challenges, but also because they require higher specialization to create an efficient organisation. A report by SNS (2015a) report is discussing municipal amalgamations as one potential solution to but also more extensive cooperation between jurisdictions and the possibility of letting small municipalities have fewer responsibilities than larger ones.

Financing

The main source of financing for the municipalities is the income taxes. The local government set the tax rate. The tax base is varying widely across regions due to e.g. differences in

income, employment and retirement. An equalization system (Kommunala utjämningssystemet) has been established in order to equalize the opportunities to provide good municipal services. The main components are cost equalization and income equalization. The first-named to equalize for differences in service need, the second to for differences in tax base (SCB 2015). The system also level off for, among other things, cost differences between rural and urban areas to some extent (SCB 2015). The system does not allow special grants on the basis of population size, but small municipalities are overrepresented among the net receivers of both income and cost grants. Economic incentives as a part of the equalization system are therefore often brought up in the discussion of small municipalities. The current system includes five parts, where of the cost equalization and income equalization make the largest part. Other than income and cost equalization there are a structural grant, an introduction grant and a regulation entry.[1] The structural grant is mainly for regional characteristics, such as population density. The introduction grant was created after a reform 2014 to compensate municipalities negatively affected by the changes. (SCB 2014)

Income equalization

The purpose of the income equalization part of the system is to equalize differences in tax payments between municipalities. As from 2005 the system is not primarily an intergovernmental grant between municipalities, but mainly financed by the central government. Some municipalities with very high tax base are still contributing to the system.

The calculation of the income grant is based on the average taxable income (average taxpaying power). In addition, the central government adds 15 per cent of the current year's average, and the net production is the equalization base (skatteutjämningsunderlaget). The municipalities will then receive a grant that corresponds to the tax equalization base, minus the actual tax base in the municipality. By the same calculations are municipalities with a higher tax base than the equalization base compelled to pay into the system (SCB 2015).

[1] There is in addition to these parts a separate grant for services for disabled (LSS)

The size of the grant is calculated using a measure that is to be independent of the individual municipality's tax level. A municipality should not be able to affect its grant by lowering or rising tax rate. The calculated tax measure (den länsvisa skattesatsen) includes three parts: one factor correcting for differences in tax-switching policies, another factor deciding compensation level and a third factor which is the tax rate. All three factors are decided by the central government. The tax rate is based on the average tax rate in the country; the compensation level has been decided to 0.95 for receivers and 0.60 for payers to the income system.[2] That is, municipalities that have a tax income lower than the calculated tax income are compensated for up to 95 per cent. The municipalities with surplus in relation to the calculated tax income are forced to abstain 60 per cent of the surplus.

The compensation level should not be mistaken for the level of equalization. The level of equalization is the level *after* the equalization. 2014 was the level of equalization for receivers of grants between 113 and 115. For grant payers the level was between 115 and 126 (SCB 2015).

Cost equalization

Except for income equalization, there is a system for costs, established to equal out the opportunities to give a certain service level for the mandatory municipal services. The system is motivated by need differences between municipalities that are beyond municipal power. Thus, the system does not equal out for differences in quality, service level or efficiency (SCB 2015).

The cost equalization contains submodels for different sectors, or a cost existing in all sectors. There are 10 submodels in the equalization for which a standard cost is calculated. In opposite to the income equalization that is mainly financed by the central government, the cost equalization is more or less an intergovernmental transfer. In effect, municipalities with service need higher than standard cost receive a grant, and municipalities below pay a fee to the system (SCB 2015).

[2] 0,85 percent for a income that exceed country average by 1,25

The standard cost is adjusted both for the number of individuals in need of services and the degree of services needed. Which factors that are used differ between submodels. For elderly care, the health status of the elderly in the municipality is included as well as age. For preschool, average time spent in preschool is taken into account. Hence, the standard cost corrects for need difference, but not quality and efficiency (SCB 2015).

Changes to the equalization system

The system has been changed a number of times during the last decades. Between 1996 and 2004 the system was more or less self-financed, since the municipalities with a large tax base contributed to the system and municipalities with small tax bases received grants in the income system. In the same way contributed the municipalities with low costs, relative to the country average to the cost equalization system and the municipalities with high costs received grants (SCB 2014). The compensation level was high during this period. A consequence of the high compensation level was that municipalities with increasing tax base were being punished by a marginal contribution to the equalization system higher than 100 % (Söderström 2002).

After reforming the system in the beginning of 2005, a system with state grants was introduced. In the same way as before, high income/low cost municipalities was contributing to the system and low income/high cost municipalities received grants. However, now grants from the central government were introduced to the system. During this period, the state government added a substantial sum. The objective was that net-contributing municipalities should keep a larger part of their surplus and thereby encourages growth (Statskontoret 2014). The system changed again 2014. Similar to the previous system, the state today guarantees a certain base level. With the new system, net payers to the system have lower fees (SCB 2014).

The equalization system and small municipalities

The calculation of grants and payments in the equalization system is not dependent on size but rather dependent on the municipality's costs and tax base.[4] However, small municipalities are overrepresented among net receivers of cost grants and receive a higher average income grant. The table below presents the correlation between income/cost grants and population size. The correlation is calculated with the grant system between 2005-2013.

Table 1 Correlation between equalization grant and population size 2005-2013

Cost grant/payments	-0.109
Income grant/payment	-0.254

Source: The council of local government analysis (Kolada database 2015)

The equalization system is necessary for municipalities with low tax power to keep somewhat competitive tax rate with well-off municipalities. In this way, municipalities can compete by being more efficient or providing demanded goods and services. However, the equalization system has been criticized for the incentive it creates. The cost grant is based on the average cost of service for a person of e.g. a certain age or disadvantage. An example brought up by Söderström (2002) is the cost gran calculation for elderly. The municipality receives a grant for a 80 year old inhabitant according to the country wide average cost of an 80 year old, creating an incentive for the municipality to attract 80 year olds that are healthier than average (Söderström 2002). A high compensation level for the income grant may also create unwanted marginal effects. If the tax rate in a municipality is lower than the calculated tax rate, the total income can be lower if the municipality increases its taxpaying power more than country average (Söderström 2002).

Although small municipalities are not treated as a special group in the equalization system, there is an incentive problem concerning small municipalities in particular. Sundström and Tingvall (2006) points out that the equalization system may effect the incentive to merge with another municipality, as the grants can change. It is possible that being overrepresented as net

[4] The are exceptions to this rule: If a school has less than 350 pupils in upper school (högstadiet) a special grant is given to the municipality. This is usually the case for small municipalities (population size <10 000). Moreover can a municipality receive a special grant if pupils have to travel long distance to school. This is mostly the case for small municipalities in the northern part of Sweden (Sundström & Tingvall 2006).

receivers in the equalization system affects the cost for services. It is therefore important to include grants and fees when investigating a cost relationship empirically.

The Danish reform

Denmark introduced a reform to reduce the number of municipalities from 245 to 100 in 2007. Denmark has, similar to Sweden, put a large welfare responsibility on the municipal level and the Danish reform has therefore contributed to the Swedish discussion on a municipality reform. The Danish Commission on Administrative Structure (2004) presented a report with a number of reform proposal, which was the basis of the 2007-year reform. The criteria were efficiency as well as quality and democracy. The commission draws the conclusion that at least 20 000, preferable 30 000 inhabitants in each municipality is necessary for the municipality to fulfil responsibilities (The Commission on Adminsitrative Structure 2004).

In comparison with Sweden, Denmark has a low equalization level between municipalities. The average equalization was 2005 0.63. As a consequence of a lower level of equalization, it can be difficult for some municipalities to fulfil requirements. Groes (2005) argues that small municipalities in Denmark with low tax base have to lower quality in services in order to compete with other municipalities' tax rates. The bottom level of 20 000 inhabitant should hence be seen in the light of this Danish system, where each municipalities has to "make it on their own". Groes (2005) however, argues that the reform not will help the poor municipalities to function better since the income differences are due to underlying factors other than population size.

3. Theoretical perspectives

The theory on optimal municipal size and consequently the relation between population size and efficiency is based on fiscal federalism theory. Two influential economists in the area are Tiebout and Oates. The advantages of small communities are similar to those of decentralisation: it will lead to a higher degree of preference matching as the decision makers

have better knowledge of local preferences, but also competition between municipalities, which increase efficiency. Furthermore smaller communities may lead to a will to experiment. The advantage of larger communities are in the same way similar to those for centralisation: it will lead to higher efficiency due to economies of scale and internalization of externalities, and larger communities usually have a higher degree of specialization.

The Tiebout model

The starting point in Tiebout's model is the government's objective to provide public goods according to individual citizen preferences and finance the services through taxation. This is difficult task since it requires that the citizens reveal their willingness-to-pay for a good. Each citizen has an incentive to understate the willingness-to-pay as it will generate a lower tax payment. According to Tiebout (1956), the political mechanism cannot perform the task in a sufficient way, and it is of relevance to find a way to both reveal and satisfy individual preferences. Tiebout draws parallels to the private market where preference realization occur in the choice of goods. Literature prior to Tiebout had often assumed a central provision, but here is the local government an important factor. He starts with describing a case: an individual living in a community but is considering to move. A person with children might prefer a community with high spending on schools. For a person without children, other characteristics such as police service, roads and parks may be of more importance.

As local authority makes it possible for local variation, a person may move to a city with a bundle of public goods closest to his or her preferences. Many communities give a higher degree of matching with individual preferences. As expressed by Tiebout:

" The greater the number of communities and the greater the variance among them, the closer the consumer will come to fully realizing his preference position" (1956, p. 418).

In order to reach an efficient outcome within this framework, several assumptions are made by Tiebout:

- Perfectly mobile voters/consumer move according to their preferences
- Voters/consumers have perfect knowledge of local differences
- There are a variation of communities which consumers are able to chose from
- No considerations of employment factors
- No spill over effects between municipalities
- An optimal city size exists for the each community's bundle of public goods and is given by the lowest production cost of that public goods bundle. Communities with too few individuals for a cost minimizing production attract more individuals and vice versa.
- Communities above and below optimal size try to decrease and increase population size respectively in order to reach lowest possible production cost.

By moving, the individual is forced to reveal willingness-to-pay for public goods. Consequently, the total consumption of each good would be the sum of demand in each community and will be purchased at the market. The amount spent on each good would therefore reflect individual preferences and be similar to the usual market forces. Each community is forced to be efficient and keep lowest possible production cost due to the competition between communities. Moving without transaction cost is a main feature in the Tiebout model as it makes it possible for individuals with similar preferences moving closer together and a more efficient provision of public goods is possible (Tiebout 1956). Preference matching is in the Tiebout model an argument for decentralisation, but can also be used as an argument for small rather than large jurisdictions (Dahlberg et al 2009).

The assumption regarding moving and employment factors are strong, which will affect the possibility of an efficient outcome (Baldwin et al 2012). One can think of a number of factors affecting the transaction cost such as employment, living costs and social life. Another common example in relation to the Tiebout model is tax avoidance. If one community has lower ability to tax (e.g. high unemployment rate), the tax rate must be high to keep service level constant. The higher tax rate gives incentive to the working individuals in the area to move to a low tax community. Consequently, the taxable income in the municipality is even

lower (Söderström 2002). Movements from one community to another can also create costs if the price for a public good is size-dependent (Tiebout 1956; Oates 1972).

Central state grants and intergovernmental grants

With a more pragmatic view on the Tiebout model with municipalities competing with each other and select tax rate after the inhabitants' preferences, there are some problematic factors. A municipality with higher employment and wages may pick a lower tax rate than other municipalities and still be able to offer same level of service. This stimulates a movement of income earners to the low tax municipality. The other municipalities are left with an even lower tax base and more difficulties to keep the service level high. It is also reasonable to except that non-movers with no income have higher service need than movers, for example retirees. A way to even out the situation is equalization through grants, which is common in many countries. Central grants, conditional as well as unconditional, are given but also intergovernmental grants, where equalization take place between jurisdictions without involving the central government.

Unconditional grants can help equalling out ability to provide equal service (Oates 1972). However, incentives might be affected. If communities are compensated for health state in the population instead of the care they provide, the community has incentive to keep service costs low. There is also an incentive problem if the level of compensation is high. Then some communities might loose income if they increase tax base (Söderström 2002). Almenberg (2007) also emphasizes potential incentive problem with equalization concerning growth. A system with equalization based on need puts the natural factor price mechanisms out of action. The resources are no longer being allocated where the marginal productivity is highest. Thus, an efficiency loss occurs and the growth is depressed.

City size

In the model above, the optimal city size is created ”naturally” as each jurisdiction seeks the lowest possible average cost for each bundle of goods provided publicly. In an extension of the model, the city can be “full” and individuals wanting to live there are forced to seek a

substitute. If a perfect substitute not exists, there will be a failure in preference matching (Tiebout 1956). It is difficult to apply this thinking in the light of the demographic changes in Sweden today. Other economists have started in another end to determine the optimal city size, with club goods.

Club good is a closely related term to public good. A club good is a good with non-rivalry up to some point but with a possibility to exclude consumers. In the simplest model of a club, all members are homogenous in preferences for the good and income. The club sets a level of good provision where the marginal rate of substitutions equals the marginal cost for all members; the cost is divided equally between members.

A local public good in turn can be viewed as a special case of a club good. Here, the consumption is exclusive to individuals in a certain area. The payment is made through taxes, where the local government have legal authority. Public services on a local level can be understood through the framework of a local public good (Hindricks & Myles 2013). If the geographical population is assumed to be fixed, the theoretical analysis of optimal jurisdictional size will start with two incentives: By joint consumption of a good, the individual cost of that good decreases. However, by the joint consumption, the individual is forced to consume a different level or bundle of public goods than he or she prefers, assuming preferences are not fully homogenous. This way the joint consumption is causing a reduction in consumer surplus (Oates 1972). This reduction in consumer surplus will be expected to increase as the number of individuals in the area increases. The optimal jurisdictional size is given when the marginal decrease in cost equal marginal decrease in consumer surplus (Oates 1972). However, one must keep in mind that many goods provided publicly are private in consumption and not a public good. The public provision can be due to redistribute reasons rather than economic efficiency.

Whether the goods are public or private, this simple modelling assumes no spill over effects of the community's actions. If this assumption is relaxed and externalities exist between communities, this speaks in favour of larger jurisdictions, since it gives the possibility to internalise externalities (Oates 1972).

Small jurisdictions are also associated with an additional cost of public decision-making. Primarily, every community is in need of administration, buildings and paid politicians in order to function. Secondly, there is a cost in terms of time and effort to elect public officials (Oates 1972). Hence, fixed costs associated with anther decision level also speak in favour for larger jurisdictions.

Economies of scale and scope

The above-mentioned argument for large jurisdictions is mainly a lower average cost in provision of goods or services. A larger population will give lower average cost for the municipality, if the production is characterised by economies of scale and/or economies of scope. The definition of economies of scale is a constantly declining average cost of production (Hindricks & Myles 2013). Economies of scale are natural for a pure public good since it is non-rivalry in consumption. For goods rivalry in consumption, economies of scale often occur when the fixed cost are high. Naturally, a larger number of individuals splitting the fixed cost lead to a lower average cost.

Economies of scale will be expected to find in capital-intensive production due to high fixed costs. In like manner, it will not expected to find in labour-intensive production (Wicker et al 2014). An argument against finding economies of scale at the municipal level is that many services here are labour intensive (Dollery et al 2008). The local level provides not one, but a range of services and goods, presumably with different production functions. Potential economies of scale in municipal production must therefore be on the aggregate level (Byrnes & Dollery 2002).

In the production of more than one good, economies of scope might occur. The definition of scope economies is when the cost for producing the goods together is lower than producing them one at a time. This implies that if economies of scale or scope exist, smaller municipalities have higher cost than larger ones, keeping the service level constant. An assumption here is that population size is a good proxy of output (Dollery et al 2008).

Municipal responsibilities

In the normative framework of fiscal federalism, macroeconomic issues such as redistribution of income and economic stabilisation are often argued as the responsibility of the central government. The local level is expected to be too small to be successful with stabilization instruments and also due to the moving possibility of individuals; income redistribution might fail as individuals have an opportunity to move (Oates 1999). For other goods are instead decentralization suggested. If the consumption of a good is restricted to a certain location or if the preference of a good depends on location, there is reason to adjust provision to local conditions. In this way, the welfare increases due to better preference matching, compared to uniform provision in the whole nation. With perfect knowledge, a central government could provide differentiated goods across jurisdictions. A more realistic assumption is however that a local government has higher knowledge of local specific preferences as well as consumption pattern and hence still provide the good or service more efficiently than the central level (Oates 1999). Moreover, local provision will increase efficiency through experimentation. With multiple small providers of a good it is easier to come up with new methods of provision, making the communities learn from each other (Oates 1999).

Theoretical implications

A summation of the theoretical framework gives us some simple implications:
There are gains from decentralization – and smaller municipalities – as it leads to better preference matching. Decentralization gives opportunity for experimentation together with competition, which is possibly leading higher cost control. On the other hand are there also inefficiencies associated with decentralization. – and smaller communities. Spill-over effects, i.e. externalities causing inefficiency together with lost economies of scale or scope. Lastly the municipal structure does often rely on equalization between municipalities and/or central government grants. Depending on how this is structured, incentive for non-efficient behaviour may be created. If small municipalities are overrepresented as receivers of equalization grants,

which is the case in Sweden, inefficiency in relation to small municipalities may occur. One may from theory expect a negative correlation between population size and cost of services, if the provision is characterised by economies of scale, although many services provided by the local level are labour intensive. Although, one may expect higher cost of decision making for small municipalities in terms of administration and political activity since an organisation has to function regardless of the municipality size.

4. Previous research

Economies of scale at the municipal level have been investigated by a number of researchers. The methods, dependent variables and country differ. The Czech republic, with more than 3200 municipalities has been the study object for two articles. Matějová et al (2014) studied the relationship in the Czech republic between per capita cost for preschool education and population size for municipalities. The authors found a non-linear relationship between population size and cost per capita. Soukopová et al (2015) did a similar study in the Czech republic but did a investigation of the effect of population size on six different spending areas: sport and leisure, culture, education, environmental protection and housing, using regression analysis. Their analysis shows no significant signs of economies of scale, and the authors further conclude that population size is not the most important factor in determining the public services provision.

In "The Risks of Intuition: Size, Costs and Economies of Scale in Local Government" Callanan et al (2014) provide descriptive data for Ireland on efficiency measures with a review on previous literature as background. No evidence for the existence of scale effects in Ireland could be found, but the number of municipalities in the study were only 34. Byrnes and Dollery (2002) survey the existing literature on economies of scale for local authorities where population size is the explanatory variable. The survey presents mixed results: 8 % confirm a constantly declining cost, 39 % find no relationship, 29 % a non-linear relationship and lastly 24 % find evidence for diseconomies of scale. Byrnes and Dollery (2002) also criticize the use of population size as the explanatory variable, as it assumes a strong

correlation between output and number of inhabitants, which may not be true if the municipalities differ in e.g. age distribution.

Some of the researchers have focused on administration cost/administration intensity and overhead cost explicit. That excludes variables such as education, police and health services or cultural activity. The advantages of focusing on overheads and administration are that those are costs which one can expect the citizen to desire cost minimisation, whereas in the above mentioned area, there are more choices embedded (Lawrence 2012). Blom-Hansen et al (2014) use the recent municipality reform in Denmark to investigate scale effect in local government. The research area is administration costs, which include e.g. cost of governance, administration and insurance. The authors find clear evidence for economies of scale in administration costs in Denmark, concluding that municipal amalgamations lead to cost-savings in administration.

The function and services of the municipal level differ between countries, which makes it difficult to apply results from other countries on Sweden. Bergren et al (2006) have investigated the effect of population size on municipal cost in Sweden with the use of regression analysis. The authors found no significant effect of population size on total municipal cost. Sundström and Tingvall (2006) compare municipal costs between Swedish municipalities using descriptive statistics. The authors find difference between the small municipalities depending on municipality type. As mentioned above, a demographic development in Sweden with urbanisation and an increasing fraction of elderly is hitting the small municipalities harder than other ones. Sundström and Tingvall analyse municipal costs in small municipalities by dividing the municipalities into groups and in that make a distinction between rural and urban areas. There has been a decrease in population size for municipalities in rural areas, especially in northern Sweden. In opposite, small municipalities in urban areas, close to larger cities are not hurt by the development and have a cost structure similar to larger municipalities. Hence the study problematizes the focus on population size when studying municipal ability to fulfil responsibilities (Sundström & Tingvall 2006).

5. Data and method

This section will investigate whether the population size variable has explanatory power for municipal costs. With the backdrop on the theoretical discussion, being small represents efficiency loss in terms of lost economies of scale. However, the empirical evidence for these theories has not been strong.

Data set

The board of municipal research (Rådet för kommun- och landstingsforskning) collects data on municipal costs and conditions directly from the municipalities, as well as from Statistics Sweden (SCB) and the National Board of Health and Welfare (Socialstyrelsen). These observations are collected in the database Kolada (Kommun- och landstingsdatabasen). The panel data set, covering the period 2005-2013, provides measures to control for a number of underlying municipal characteristics, such as unemployment and population age. In addition, it is possible to control for time-invariant municipal characteristics due to the panel structure.

Dependent variables

Four dependent variables are used in the regression analysis:

- *Total cost of municipal activity* (SEK)
- *Deviation from standard cost* (%)
- *Total cost of political activity* (SEK)
- *Administration intensity* (administrative personnel per capita)

Total cost of municipal activity includes all types of service the municipality performs, both mandatory and voluntary. Differences in this measure may hence be due to efficiency differences as well as ambition and service level. A second measure is the percental deviation from standard cost. The standard cost measure is explained in the section regarding the equalization system and is a cost measure used to calculate the cost grant. The standard cost is adjusted to service needs in the specific municipality but is not supposed to correct for efficiency differences. An advantage of using the deviation from standard cost is that several variables are controlled for in the standard cost, among the health status for elderly in the

elderly care standard cost, special needs in schooling standard cost etc. Hence, the standard cost represent the supposed cost a municipality, according to service need if having country average costs for services to those people. Thus, using deviation from standard cost, the variable is corrected for some factors that otherwise not would controlled for.

The last two measures: *total cost of political activity* and *administration intensity* are included to capture the potential fixed cost of having an extra decision level, presented in the theoretical framework of fiscal federalism. Costs of political activity include both costs for boards and revision and support for political parties. Empirical research, including the results from Denmark, suggests higher costs of administration and overhead for small municipalities, and cost savings in administration by municipal amalgamations. Administrative costs are not available in the data set. An alternative measure for administrative burden is number of full-time employees in administration (Stanley & Adams 1994). To measure the administrative burden, number of employees in administration divided with population size is used. For this variable, data is available year 2008-2013. Hence, the sample is smaller than for the other variables.

Explanatory Variables

Since elderly care, schooling and social services are mandatory municipal tasks, the fraction of elderly and fraction of young individuals may affect the municipal costs. The unemployment rate and fraction of foreign born are also group associated with high needs of municipal services (Ellegård 2013). As mentioned in the previous section, the municipality income consists of the municipality's own tax payments as well as grants from the equalization system. Since it cannot be excluded that grants create other incentive for municipalities than income from taxation, income grants and cost grants are controlled for in the regression analysis as well as tax base. The fraction of services under municipal management (in contrast to private provision) is included as a control variable. It is possible that choice of public or private provision affects costs. Small municipalities have a higher degree of public management than other municipalities (SNS 2015b).

Lastly, dummy variables for rural or urban municipality are included. The report by Sundström and Tingvall (2006) outlined above concerning the Swedish system suggests large differences between small municipalities close to larger cities and small municipalities in rural areas. Rural areas will be expected to have higher cost due to longer distances between the inhabitants. Municipalities near towns or cities can be expected to have lower costs as many inhabitants are commuting into the cities and use the city resources

In order to sort out rural and municipalities close to cities, the division of municipality types created by the Swedish Association of Local Authorities and Regions (SKL), is used. The municipality groups are presented in table 1. Two dummy variables are created: *rural municipality*, including municipalities from group 8 and 10, and *suburban municipalities,* including municipalities from group 2, 4 and 5.

Table 2 Municipality group

1. Large city (storstad)
2. Suburb to large city (förortskommun till storstad)
3. Larger cities (större städer)
4. Suburb to larger towns (förort till större stad)
5. Commuting municipality (pendlingskommun)
6. Tourism municipality (Turism- och besöksnäringskommuner)
7. Goods producing municipality (Varuproducerande kommuner)
8. Municipality with low population density (Glesbygdskommuner)
9. Municipality in urban region (Kommuner I tätbefolkad region)
10. Municipality in rural region (Kommuner I glesbefolkad region)

Source: SKL (2015)

Table 3 presents summary statistics over all variables. All variables in SEK are measured per capita and given in real prices (index=2005). Table 4 presents correlation between population size and the other included variables. Population size correlates negatively with all four dependent variables. There is also a negative correlation between population size and grants from the equalization system as well as for fraction of elderly and unemployment. Fraction of foreign born and tax base have a positive correlation with population size.

Table 3 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Total cost (SEK)	2609	47695.120	5546.553	34479.000	80416.020
Deviation from standard cost (%)	2607	2.636	7.004	-100.000	29.800
Cost of political activity (SEK)	2609	669.028	238.688	183.000	2257.813
Administration intensity	1740	0.003	0.001	0.001	0.007
Population size	2610	32199.290	63782.230	2421.000	897700.000
Young 0-19 (%)	2610	23.337	2.486	16.647	31.411
Elderly 65+ (%)	2610	20.883	3.891	9.900	32.300
Forein born adults (%)	2610	12.836	6.918	3.000	51.600
Unemployment rate (%)	2610	6.271	2.436	1.100	17.200
Cost grant (SEK)	2610	455.144	2149.258	-3792.948	10093.920
Income grant (SEK)	2610	6630.396	3392.549	-19325.760	14917.090
Tax base (SEK)	2610	144029.400	18080.880	112816.000	290538.700
Services under municipal management (%)	2609	84.679	7.550	16.000	99.000
Rural municipality (Binary)	2610	0.124	0.330	0	1
Suburban municipality (Binary)	2610	0.383	0.486	0	1

Source: The council for local government analysis (Kolada database 2015)

Table 4 Correlation with Population Size

Variable	Correlation with population size
Total cost (SEK)	-0.187
Deviation from standard cost (%)	-0.179
Cost of political activity (SEK)	-0.301
Administration intensity	-0.157
Young 0-19 (%)	-0.002
Elderly 65+ (%)	-0.345
Forein born adults (%)	0.345
Unemployment rate (%)	-0.054
Cost grant (SEK)	-0.109
Income grant (SEK)	-0.254
Taxable income (SEK)	0.260
Services under municipal management (%)	-0.155
Rural municipality (Binary)	-0.109
Suburban municipality (Binary)	-0.111

Source: The council for local government analysis (Kolada database 2015)

A missing variable in the regression is service quality. Part of the cost variation can presumably be due to quality differences rather than efficiency differences. If quality is related with population size and total cost, the variable population size will be endogenous and the regression will give bias results. Sundström and Tingvall (2006) find no signs of correlation between population size and service quality in schooling. A central government report finds no correlation between population size and quality in the local government welfare services in general. However, municipalities in rural areas report problem with recruiting qualified personnel in order to keep service level constant (SOU 2007:11).

Estimation strategy

The relation between population size and costs is estimated using two models; one OLS model and one fixed effects model. Since previous reports indicate an importance of municipality type, the OLS regression model is given by:

$$(1)\ y_i = \alpha_1 + \alpha_2 Rural + \alpha_3 Suburban + \beta Population\ size_i + \varphi[Rural * Population\ size] + \delta[Suburban * Population\ size] + \theta Z_i + \varepsilon_i$$

Where Z is a vector of control variables. The municipality types *Rural* and *Suburban* are binary variables (0 and 1) and included both individually and as interactive variables multiplied with population size. The coefficient β for population size should therefore be interpreted as the coefficient of population size for municipalities that are not rural nor suburban municipalities, φ the coefficient for rural municipalities and δ for suburban.

The second model is a panel data fixed effects model. Since the sample contains observations from all Swedish municipalities for a sample period of nine year, the observations cannot be treated as a random sample from a population. Fixed effects are therefore preferred over random effects (Verbeck 2012). The fixed effects model makes it possible to control for time-invariant municipal characteristics, and hence avoid possible omitted variable bias. By using fixed effects, the relationship is estimated through the within-municipality variation (Cameron & Miller 2015). The fixed effects-model sort out all time-invariant characteristics,

which makes it impossible to include other time-invariant dummy variables in the regression, such as municipality type. The fixed effect model is given by:

$$(2)\ y_{it} = \alpha_i + \beta Population\ size_{it} + \theta Z_{it} + \varepsilon_{it}$$

In addition, it is reasonable to assume that the county council has an effect on the results. The income tax consists of two parts: one to the municipality and one to the county. The two government levels must therefore adjust to each other. Some areas of responsibility are also overlapping. To test the robustness of the results, dummy variables for counties are included in model (1). The results are presented in appendix (Table A)

All economic variables are given in real prices per capita with 2005 as index year. Dummies for each year are included to control for year effect. Robust standard errors - clustered on municipality - are applied to correct for heteroscedasticity and autocorrelated error terms in both models.

6. **Results**

Table 5 below presents regression output for the dependent variables *cost of total municipal acitivity* with the OLS and fixed effects model. Table 6 presents the result from the same two models with deviation from standard cost as dependent variable. The results for costs of political activity and administration intensity are presented in table 7 and 8 respectively.

All tables present the results for the OLS model and for the fixed effects model. To test whether the county affects the result, an additional model is created were dummies for county affliction is included in the OLS regression. The model change did not affect the significance of population size but resulted in a decrease of coefficient size. The regression result of this model is presented in appendix (Table A).

Table 5 Total Costs of Services

VARIABLES	(1) Total costs of Municipal Services OLS	(2) Total costs Municipal Services Fixed effects
Population size	-0.003	-0.039***
	(0.002)	(0.011)
Rural area	5,413***	
	(1,378)	
Suburban	-1,213***	
	(449.400)	
Rural area*population size	-0.148**	
	(0.059)	
Suburban*population size	-0.004	
	(0.012)	
Young 0-19 (%)	-110.800	-33.820
	(175.900)	(143.900)
Elderly 65+ (%)	197.100	14.640
	(143.600)	(121.100)
Foreign born (%)	-20.650	-44.740
	(29.550)	(68.020)
Unemployment rate (%)	257.800***	-91.450*
	(94.760)	(49.030)
Income grant (SEK)	-0.652***	-0.186
	(0.207)	(0.168)
Cost grant (SEK)	1.007***	0.432***
	(0.159)	(0.130)
Tax base (SEK)	-0.124***	-0.047
	(0.041)	(0.037)
Services under municipal management (%)	139.200***	41.540***
	(26.950)	(15.310)
Constant	50,119***	50,646***
	(8,688)	(8,493)
Observations	2,609	2,609
R-squared	0.728	0.719
Number of municipalities		290

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 Total Deviations from Standard Cost (%)

VARIABLES	(1) Deviation from standard cost (%) OLS	(2) Deviation from standard cost (%) Fixed effects
Population size	-0.00000647	-0.0000263
	(0.00000450)	(0.0000240)
Rural area	6.165***	
	(1.769)	
Suburban	1.971**	
	(0.777)	
Rural area*population size	-0.000150*	
	(0,0000884)	
Suburban*population size	-0.0000521**	
	(0.0000230)	
Young 0-19 (%)	-0.746***	-1.136***
	(0.258)	(0.393)
Elderly 65+ (%)	-0.307	-0.729***
	(0.189)	(0.277)
Foreign born (%)	-0.253***	-0.484***
	(0.060)	(0.172)
Unemployment rate (%)	-0.192	-0.249*
	(0.162)	(0.144)
Income grant (SEK)	0.000402*	-0.000563
	(0.000225)	(0.000343)
Cost grant (SEK)	-0.000271	0.000508*
	(0.000188)	(0.000294)
Tax base (SEK)	0.0000248	-0.000158**
	(0.0000453)	(0.0000787)
Services under municipal management (%)	0.144***	0.069*
	(0.037)	(0.037)
Constant	9.445	68.170***
	(13.390)	(17.090)
Observations	2,607	2,607
R-squared	0.295	0.091
Number of municipalities		290

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.

Table 7 Total Cost of Political Activity

VARIABLES	(1) Political activity (SEK) OLS	(2) Political activity (SEK) Fixed effects
Population size	-0.000657**	0.000583
	(0.000269)	(0.00105)
Rural area	73.990	
	(74.340)	
Suburban	118.300***	
	(30.470)	
Rural area*population size	-0.0000755	
	(0.00339)	
Suburban*population size	-0.00239***	
	(0.000654)	
Young 0-19 (%)	-23.240***	2.834
	(8.280)	(11.730)
Elderly 65+ (%)	0.986	7.349
	(6.191)	(7.747)
Foreign born (%)	-1.009	1.214
	(2.274)	(4.630)
Unemployment rate (%)	4.562	-0.685
	(5.713)	(3.517)
Income grant (SEK)	0.016*	-0.0137
	(0.00836)	(0.0116)
Cost grant (SEK)	0.0423***	-0.00742
	(0.00732)	(0.00808)
Tax base (SEK)	0.00250	-0.00104
	(0.00175)	(0.00231)
Services under municipal management (%)	1.217	3.270***
	(1.072)	(1.240)
Constant	555.900	324.900
	(479.300)	(486.400)
Observations	2,609	2,609
R-squared	0.422	0.109
Number of municipalities		290

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 Administration intensity

VARIABLES	(1) Administration intensity OLS	(2) Administration intensity Fixed effects
Population size	-0.000000000355	-0.00000000147
	(0.000000000467)	(0.00000000282)
Rural area	-0.000235	
	(0.000246)	
Suburban	-0.000146	
	(0.000114)	
Rural area*population size	0.0000000119	
	(0.0000000108)	
Suburban*population size	0.000000000445	
	(0.0000000000212)	
Young 0-19 (%)	-0.0000562*	-0.00000910
	(0.0000320)	(0.0000607)
Elderly 65+ (%)	0.00000490	0.0000149
	(0.0000232)	(0.0000403)
Foreign born (%)	-0.00000973*	-0.0000269
	(0.00000566)	(0.0000340)
Unemployment rate (%)	-0.0000282	0.00000242
	(0.0000203)	(0.0000129)
Income grant (SEK)	-0.0000000312	-0.0000000127
	(0.0000000326)	(0.0000000425)
Cost grant (SEK)	0.000000104***	0.0000000355
	(0.0000000242)	(0.0000000394)
Tax base (SEK)	-0.0000000109	-0.00000000543
	(0.00000000674)	(0.00000000889)
Services under municipal management (%)	0.0000243***	0.00000829
	(0.00000530)	(0.00000681)
Constant	0.00384**	0.00309
	(0.00174)	(0.00267)
Observations	1,739	1,739
R-squared	0.326	0.067
Number of municipalities		290

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The OLS regression results on total costs presented in table 5, population size is significant for rural municipalities, but neither for suburban nor other municipality types. The size of the coefficient is -0.148 for rural municipalities. To set this number in a context, an increase in population size by 1000 inhabitants would lead to a cost saving per inhabitant of 148 SEK. In addition, rural municipalities have a significantly higher intercept than other municipalities. The correlation remains with deviation from standard cost as dependent variable, presented in table 6. In this OLS regression, both suburban and rural municipalities have significant negative correlation between population size and deviation from standard cost.

There can be many reasons for cost differences that are not captured by the control variables in OLS model. By the use of a fixed effect model, time-invariant variables for each municipality are at least controlled for. In the fixed effect model is population size significant on total cost of services. The coefficient is -0.0385. An increase in population size by 1000 inhabitants would hence lead to a cost saving per inhabitant of 38,5 SEK. The correlation does not remain when deviation from standard cost is the dependent variable. Hence, there are signs of a negative relation between population size and costs, but the effect is sensitive to which measure that is used and model specification.

The two dependent variable that were included to measure some fixed cost of another decision making level – cost of political activity and administrative intensity – are presented in table 7 and 8. In the OLS model, population size significantly affects political activity negatively, except for the group with rural municipalities. No significant results are found for administration intensity.

7. **Summarizing discussion**

Economic theory on municipality size suggests both advantages and disadvantages with a small population size. One of the advantages is better preference matching, even though services might be more expensive, due to lost economies of scale and many decision levels. Small municipal units have been pictured as a problem in the public debate for more reasons

than cost, but the idea of cost savings is crucial. Recently, the minister of public administration suggested municipal amalgamations as one possible solution. But cost savings from amalgamations would only be possible if population size in itself has affect on cost, since other characteristics for the municipalities would not change (Berggren et al 2006).

The results in this study give some support for a correlation between population size and costs also after controlling for other demographic characteristics since a significant negative relation is found on total cost with both the OLS and the fixed effects model. However, the results are not that clear for deviation from standard cost as dependent variable. This may be a sign that the relation found in the former regression is due to service need differences rather than efficiency differences. The dataset does not have the need of childcare, special schooling and health care etc at hand. These are however to some degree included in the calculation of standard cost. This variable is hence adjusted to service need to a higher degree than total cost. A negative relation between deviation from standard cost and population size is significant for rural municipalities and suburban municipalities in the OLS regression, but not with fixed effects.

Since the result is sensitive to choice of model, it is difficult to draw conclusions from the results. Caution must also be taken with treating the result as a causal effect, since the data set not provides measures to control for quality. Increasing costs may be due to voter preferences rather than inefficiencies. Local variation is one of the advantages of decentralization in the theoretical framework. On the other hand, if there are efficiency differences due to population size, small municipalities might be more willing to lower quality than increase taxes, as a tax increase can lead to high-income earners moving. Since individuals can move, the causality may potentially also go in the other direction.

A possible explanation for the weak evidence of a relation between population size and deviation from standard cost are the labour intensive characteristics of a large part of the municipal services, which is suggested by Dollery et al (2008). If the advantages of large jurisdictions are small, the gains of small municipalities and higher degree of preference matching might over overtop the disadvantages. Dahlberg et al (2009) have presented evidence for better preference matching in small municipalities. However, one must also include the aim and purpose of the municipalities into the discussion. Theory suggests

advantage of decentralization especially if preferences of types of services and service level differ across municipalities (Söderström 2002). Is this the case for the mandatory services provided by the Swedish municipalities? The main parts of municipal responsibilities are mandatory and regulated by the central government. The theoretical economic advantages are therefore unclear.

The result does not give any clear support for an impact of population size on municipal costs and hence does not give clear support for cost savings by municipal amalgamations. That does not exclude other costs of having many municipalities. Externalities in form of difficulties cooperation between municipalities and other effects of boarders are inefficiencies that are not captured in a regression on total costs. Furthermore, the current municipal system relies on an equalization system, making it possible for municipalities with low tax base to survive. There is a risk that the high compensation level creates unwanted incentive for grant receiving municipalities. In the long run, incentive for growth might be affected. One of the changes made by the reform in Denmark was a reduction of the compensation rate as it was expected that larger communities could survive on their own. A risk, brought up by Groes (2005) is that municipalities will lower service level when compensation goes down. The result does neither not speak against the view that small municipalities are in a difficult position for future supply of welfare services. Population size correlates negatively with fraction of elderly and unemployment rate and half of the municipalities in rural areas have less than 10 000 inhabitants.

According to the theoretical framework as well as previous research, one can expect a negative relation between population size and cost of political activity or administration intensity. Since every municipality is in need of decision makers and a functioning organisation regardless of population, these could to some extent be treated as fixed costs. The results from the regression analysis do however give little support for this hypothesis. Some evidence is found for a relation between cost of political activity and population size in the OLS model for non-rural municipalities.

In general, municipality type has explanatory power in the regression analysis. The results highlight the importance of including the type of municipality in the discussion of a municipal reform. The results presents both cost differences between rural and urban municipalities; and

different effects of population size. The effect of municipal type can only be observed in the OLS model and not in the fixed effects model. One must consequently aware of potential bias in the OLS estimation compared to the fixed effects since it does not control for all time-invariant characteristics.

The aim of this essay is to investigate the relation between population size and municipal costs. If cost savings can be made by a reform, population size alone must be of importance since other underlying variable do not change. The results presented are sensitive to choice of dependent variable and model specification but give some support for a relation. A conclusion that can be drawn is that the problems for Sweden's smallest municipalities are more complicated than small population size. Small municipalities are overrepresented in rural areas and are hurt by the demographic development. Population size also correlates negatively with variables associated with high costs such as fraction of elderly and unemployment. These underlying factors would not change by amalgamation. The results in this essay hence give some support for cost savings by a municipal reform but also highlight the problems with focusing on population size exclusively.

8. **References**

Almenberg, J. (2007). Kortslutna signaler: vad som sägs och vad som inte sägs om inkomstutjämningen mellan kommuner. *Federalism på svenska*. (S. 99-127)

Baldwin, R., Cave, M. & Lodge, M. (2012). *Understanding regulation [E-book] : theory, strategy, and practice.* (2nd ed.) Oxford: Oxford University Press.

Berggren, I., Haglund, A., Melin, T., Norrlid, A. (2006) Storleken som kommunalekonomiskt problem - Samband mellan kommunstorlek och kostnadsläge i Sveriges primärkommuner. Report [PDF] Available at: http:// www.rka.nu/download/18.5ae6635914928d3626673bc3/1414673636257/rka-storlek-kommunalekonomiskt-problem-2006.pdf [Accessed 2015-08-17]

Blom-Hansen, J., Houlberg, K., & Serritzlew, S. (2014). Size, Democracy, and the Economic Costs of Running the Political System. *American Journal Of Political Science, 58*(4), 790-803. doi:10.1111/ajps.12096

Byrnes, J., & Dollery, B. (2002). Do Economies of Scale Exist in Australian Local Government? A Review of the Research Evidence1.*Urban Policy & Research, 20*(4), 391-414.

Callanan, M., Murphy, R., & Quinlivan, A. (2014). The Risks of Intuition: Size, Costs and Economies of Scale in Local Government.*Economic & Social Review, 45*(3), 371.

Cameron, A. C., & Miller, D. L. (2015). A Practitioner's Guide to Cluster-Robust Inference. Journal Of Human Resources, 50(2), 317-372.

Dahlberg, M., Mork, E., & Ã□gren, H. (2009). On the Size of Political Jurisdictions: Preference Matching in Local Governments. Conference Papers -- *Midwestern Political Science Association, 1*

Dagens Nyheter 2015 *Oron växer över klyftorna mellan små och stora kommuner.* Available: http://www.dn.se/nyheter/oron-vaxer-over-klyftorna-mellan-sma-och-stora-orter/ [accessed 2015-07-21]

Dollery, B., Byrnes, J., & Crase, L. (2008). Australian Local Government Amalgamation: A Conceptual Analysis Population Size and Scale Economies in Municipal Service Provision. *Australasian Journal Of Regional Studies, 14*(2), 167-175.

Ellegård, L.M. (2013). *Political conflicts over public policy in local governments*. Diss. Lund : Lunds universitet, 2013. Lund

Feltenius, D. (2012). Decentraliserad äldreomsorg under förvaltning. Offentlig Förvaltning. *Scandinavian Journal Of Public Administration*, (3and4), 61.

Groes N, (2005), ”Decentralisering eller statsstyrning? – den danska kommunreformens innehåll och utmaningar”, Ekonomisk Debatt Nr 5 2005, s 77-95

Gustafsson, G. (1980). *Local government reform in Sweden*. Lund: LiberLäromedel/Gleerup.

Hindriks, J. & Myles, G.D. (2013). *Intermediate public economics*. (2. ed.) Cambridge, MA: MIT Press.

Lawrence, S. (2012). Economies of Scale in Local Government: General Government Spending.*Ibusiness*, (03), 265

Matějová, L., Plaček, M., Krápek, M., Půček, M., & Ochrana, F. (2014). Economies of Scale – Empirical Evidence from the Czech Republic.*Procedia Economics And Finance, 12*(17th International Conference Enterprise and Competitive Environment 2014), 403-411.

Oates, W. E. (1999). An Essay on Fiscal Federalism. *Journal of Economic Literature,* (3). 1120.

Oates, W.E. (1972). *Fiscal federalism*. New York

SCB (2014): Historisk kommunalekonomisk utjämning [PDF]. Available at: http://www.scb.se/Statistik/OE/OE0115/_dokument/Historik_kommunalekonomisk_utjamning.pdf [accessed 2015-08-10]

SCB (2015) Beskrivning av kommunalekonomisk utjämning [PDF] available at: http://www.scb.se/Statistik/OE/OE0115/_dokument/Beskrivning_av_kommunalekonomisk_utjamning_utfall_2015.pdf [accessed 2015-08-10]

SKL(2015) Kommungruppsindelning. Available online: http://skl.se/tjanster/kommunerlandsting/faktakommunerochlandsting/kommungruppsindelning.2051.html [accessed 2015-08-16]

SNS (2015a) Strategier för att möta småkommunernas utmaningar. [PDF] Available at: http://www.sns.se/sites/default/files/sns_analys_nr_26.pdf [accessed 2015-04-06]

SNS (2015b) Storleken spelar roll – om kommunstorlek och privatisering av välfärdstjänster. [PDF] available at: http://www.sns.se/artikel/storleken-spelar-roll-%E2%80%93-om-kommunstorlek-och-privatisering-av-valfardstjanster [accessed 2015-08-18]

SOU 2007:10 Ansvarskommittén Hållbar samhällsorganisation med handlingskraft. Government report [PDF] Available: http://www.regeringen.se/content/1/c6/07/75/20/a50fe36e.pdf 2015-04-029 |accessed 2015-08-17]

SOU 2007:11 Ansvarskommittén Staten och kommunerna – uppgifter, strukturoch relation. Government report |PDF] Available at: http://data.riksdagen.se/fil/6C951F08-96CF-42C8-9920-9C30F37131AB. [accessed 2015-08-19]

Söderström, L. (1991). *Fiscal federalism: the Nordic countries' style*. Lund: Univ., Nationalekonomiska inst..

Söderström, L (2002) Hoten mot kommunerna. Report. [PDF] Available at: http://eso.expertgrupp.se/wp-content/uploads/2013/08/2002_7-Hoten-mot-kommunerna.pdf [accessed 2015-08-18]

Soukopová, J., Nemec, J., Matějová, L., et al. (2015). Municipality Size and Local Public Services: Do Economies of Scale Exist ?. *NISPAcee Journal of Public Administration and Policy*, 7(2), pp. 151-171

Stanley, E. C., & Adams, J. W. (1994). Analyzing Administrative Costs and Structures. *Research in Higher Education,* (1). 125

Statskontoret (2014) Det kommunala utjämningssystemet. Report [PDF] Available at: http://www.statskontoret.se/upload/Publikationer/2014/201402.pdf [accessed 2015-04-15]

Sundström, B. och Tingvall, L. (2006) Ansvarskommitténs skriftserie: Färre kommuner? Om små kommuner problem och utmaningar.

9. **Appendix**

Table A Regression results with county fixed effects

VARIABLES	(1) Total costs	(2) Deviation from standard cost	(3) Cost of political activity	(4) Administrative intensity
Population size	-0.000812	-4.53e-06	-0.000630**	-3.01e-10
	(0.00188)	(5.11e-06)	(0.000282)	(4.63e-10)
Rural area	2,678**	4.859***	23.89	-0.000408*
	(1,089)	(1.728)	(69.83)	(0.000243)
Suburban	-691.0*	2.419***	104.6***	-0.000145
	(360.6)	(0.731)	(30.49)	(0.000106)
Rural area*population size	-0.107**	-0.000124	-0.000270	8.32e-09
	(0.0444)	(8.33e-05)	(0.00366)	(1.13e-08)
Suburban*population size	-0.00225	-4.38e-05**	-0.00167***	9.64e-10
	(0.00950)	(2.19e-05)	(0.000538)	(2.07e-09)
Young 0-19 (%)	86.84	-0.624**	-24.78***	-4.68e-05
	(154.4)	(0.288)	(7.923)	(3.38e-05)
Elderly 65+ (%)	358.4***	-0.225	-3.285	1.23e-05
	(123.1)	(0.212)	(6.562)	(2.53e-05)
Foreign born (%)	51.72*	-0.183***	-2.426	-6.56e-06
	(30.36)	(0.0602)	(2.314)	(6.77e-06)
Unemployment rate (%)	146.6	-0.322*	-2.961	-3.00e-05
	(93.13)	(0.166)	(5.439)	(2.46e-05)
Income grant (SEK)	-0.371**	0.000567**	0.0116	-3.60e-09
	(0.157)	(0.000287)	(0.00949)	(3.06e-08)
Cost grant (SEK)	0.700***	-0.000368	0.0486***	8.90e-08***
	(0.140)	(0.000237)	(0.00694)	(2.83e-08)
Tax base (SEK)	-0.0901***	4.15e-05	0.000271	-7.06e-09
	(0.0308)	(5.73e-05)	(0.00194)	(6.39e-09)
Services under municipal management (%)	90.09***	0.0760**	-0.811	2.10e-05***
	(20.11)	(0.0374)	(1.302)	(5.38e-06)
Constant	39,976***	8.875	1,240**	0.00304
	(7,404)	(17.00)	(536.8)	(0.00195)
Observations	2,609	2,607	2,609	1,739
R-squared	0.820	0.353	0.490	0.386

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1