Stockholm School of Economics
Department of Economics
Master's Thesis

Intergovernmental Grants and Elderly Care

A Case Study of the Flypaper Effect

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ABSTRACT

The flypaper effect is an empirical puzzle that arises in studies on intergovernmental grants. While economic theory predicts that intergovernmental grants are crowding out local government spending, empirical studies often show a high degree of crowding in. This thesis uses the stimulus grants for elderly care, given by the Swedish government to the municipalities in 2006 to 2010, as a case study of the flypaper effect. To test if there is a flypaper effect in this case I run a fixed effects regression, correcting for autocorrelation, to see if the trend in elderly care spending changes when the stimulus grants are introduced. The result of this study indicates that the stimulus grants for elderly care are crowding in local government spending. It seems like municipalities not only increase spending with the whole amount of grants, they also put in the same amount and more by themselves. When adding a variable with lagged stimulus grants, this gives an even stronger effect, indicating that more resources are used in elderly care the year after the stimulus grants were given. One reason for this might be that many projects paid by the stimulus grants became parts of the regular operation when they were finalized.

Keywords: Intergovernmental Grants, Flypaper Effect, Elderly Care, Municipality Economy, Sweden.

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1 Introduction

Intergovernmental grants are often used to finance public goods and services or in some cases to stimulate the economy in general. Resources that are collected on one governmental level are thereby used at another level. Usually these grants are provided by a higher government level to a lower level, for example from the state to municipalities and counties.

An important and interesting issue for policymakers and researchers is whether these grants are used as intended or if local governing bodies use intergovernmental grants at their own discretion. Classic economic theory would predict that intergovernmental grants would be used in the same way as any other increase of income. That is, in accordance with the marginal propensity for local government to spend out of income (Hines & Thaler, 1995). Intergovernmental grants could therefore be predicted to be used to decrease taxes and to increase spending also in other areas than the intended one (Gordon, 2004).

On the other hand, when studying intergovernmental grants, many researchers find that more resources than predicted are used in the intended manner. The findings in these studies imply that intergovernmental grants come with a higher marginal propensity to spend than other income (Gordon, 2004). The central issue is whether intergovernmental grants are crowding in or crowding out local government spending (Knight, 2002). When spending in the targeted area increases more than what would be predicted from the marginal propensity to spend, it is said that the grants are crowding in local government spending. If the increase in spending is the same or lower than the marginal propensity to spend, the grants is said to be crowding out local government spending.

The puzzle that economic theory predicts intergovernmental grants to crowd out local government spending while many empirical studies implies the opposite is called the *flypaper effect*. It is called so because the empirical findings imply that "money sticks where it hits" (Hines & Thaler, 1995).

This thesis will study how stimulus grants intended to increase performance in elderly care are used by the Swedish municipalities. The Swedish government has provided stimulus grants to all counties and municipalities since 2006 to be used in projects increasing the performance of elderly care. In this study I will try to estimate the effect of the stimulus grants for elderly care to see if local government spending is crowded in or crowded out.

1.1 Purpose and Contribution

Funding local public goods and services through general or specific grants is an important part of the Swedish government's budget. One reason for this might be that taxes are most effectively collected at the national level while public services are most effectively delivered on a local level (Dahlberg et.al., 2008). Even though Sweden has a comparatively high level of municipality autonomy including a high level of local taxation (Dahlberg et.al., 2008), that does not mean that no resources are provided from the central government. It is therefore of interest to see whether the extra income that comes from intergovernmental grants are used according to the central government's intention.

About SEK 70 billion are provided to municipalities and counties through the municipal equalization system based on a number of variables. Some of the funds for this system come from high income municipalities but most of the funds come from the central government (SOU 2011:39). In response to the financial crises and recession in 2008 and 2009 the Swedish government gave lump sum stimulus grants of SEK 14 billion to municipalities and counties in 2010 (Prop 09/10:1). There are also a number of programs on the central government level that are more specific in targeting different issues on the local level. One example is *kömiljarden* (the queuing billion) that is split between the counties that have reached a specific target on decreasing the queuing time for healthcare (Prop 09/10:1).

Another example of intergovernmental grants in Sweden is the stimulus grants for elderly care. I will use these grants in this study to investigate whether specific grants to a targeted sector is crowding in or crowding out local government spending.

The discussion in Sweden of state funding for local public services during the last years have mostly been focusing on lump sum grants and result based grants. Lump sum grants were a main part of the stimulus package to handle the financial crisis and recession in 2008 and 2009. The case for result based grants has also gained ground and this fact can be seen in the Swedish government's plan to level out the specific funds for elderly care during the coming three years and make them result based (Prop 2010/11:1, Alliansen, 2010).

The aim of this study is therefore to take another look at the issue of intergovernmental grants and see whether grants targeted on specific local public services should be used also in the future. The starting point of this study is the puzzle called the flypaper effect and the purpose of the thesis is to see if targeted grants to local governments stick where it hits.

To this end, I will use the stimulus grants for elderly care given to municipalities year by year from 2006 to 2010. I will examine if these stimulus grants have increased spending on

elderly care at the municipality level. The specific research question is therefore: Have the stimulus grants for elderly care crowded in or crowded out local government spending? I am using elderly care as a case study because it is a distinctive area where targeted intergovernmental grants have been used in the last years, and is therefore accessible for studying the flypaper effect.

1.2 Scope

The issue of central government funding of local level public services in Sweden includes many parts that might be of great interest but will be excluded from this study. One such part is the municipal equalization system that in itself includes different grants to equalize some of the income and spending difference between municipalities and counties (SOU 2011:39).

The theoretical framework regarding intergovernmental grants and the flypaper effect is often used in research about political economy. This study will only focus on the stimulus grants for elderly care and the effects on spending without any political economy implications. That means that I will not take into account the median voter's sympathy or other political aspects.

The stimulus grants for elderly care have been given to both municipalities and counties. This study will focus on the municipalities, mainly because it is the municipalities that are responsible for providing elderly care and that it gives more data to analyze.

1.3 Disposition

I will begin in the following section with an overview of the economic theory regarding intergovernmental grants and the flypaper effect. It also contains a review of earlier research and findings in the field. Section 3 introduces the case of stimulus grants to elderly care used in Sweden from 2006 and onwards.

In section 4 I discuss methodological issues including data collection, management of data, specification of the econometric model, tests for autocorrelation in the data and a couple of robustness tests. Section 5 starts with a short graphic analysis and then moves on to the econometric analysis where I try to fit a model to see if the stimulus grants are crowding in or crowding out local government spending. Section 6 summarizes and I give a concluding analysis and some suggestions for future research.

2 Earlier Research and Theoretical Framework

This section will give a brief overview of the theoretical framework and empirics regarding intergovernmental grants to local governing bodies. The economic theory will be explained in subsection 2.1, the flypaper effect will be explained in 2.2 and subsection 2.3 will give an overview of some research that has been done on the flypaper effect.

2.1 Economic Theory of Intergovernmental Grants

According to economic theory, a lump sum grant given to local level governments from a higher level (usually the central government or international bodies) is to be seen as any other increase of income. This because it is effectively equivalent to a payment to the individuals living in the local level's constituency (Witterblad, 2007). The politicians or other decision-makers in the local jurisdiction should therefore use this increase in income just as any other increase. Intergovernmental grants are therefore expected to be allocated between local level public goods and private goods according to income elasticity of the people living in the county or municipality, in theory the income elasticity of the median voter (Bradford & Oates 1971a,b).

The share of the increase that is used for government goods and services should be the same as the marginal propensity of local governments to spend out of income (Hines & Thaler, 1995). For municipalities in Sweden, that is approximately 20 percent of the income increase, equivalent to the municipal tax rate. Local governments are supposed to have arranged an optimal mix of local level public goods and private goods and intergovernmental grants would therefore mainly be handed out to the population as reduced taxes or lower fees (Dahlberg et.al., 2008).

Also for grants that are specified to match local level expenditures it is possible to derive a theoretical prediction of the effect on spending (Hines & Thaler, 1995). In these cases it is needed to take into account that the extra income can be used in other types of public expenditures as well. Gordon (2004) gives an example of how this might work. A poor district that receives large so called Title I grants, a U.S. national education program to improve academic performance of children at risk of school failure, may respond by redirecting resources from education to other areas, e.g. tax reduction, health care or criminal justice. The result might be that the extra income received by the school districts is less than the federal grant.

Economic theory and simple political economy models imply that intergovernmental grants crowds out local government spending. This means that the grants give little or no increase in combined public spending (Knight, 2002).

2.2 The Flypaper Effect

When testing whether intergovernmental grants crowd out or crowd in local government spending, most researchers find that intergovernmental grants do not crowd out local government spending. It is more common that they find some crowding in of local spending. This result of course contradicts the economic theory outlined by Scott (1952) and Bradford & Oates (1971a,b) described in the subsection above. Instead of using the new income in line with an optimal mix between different public goods and tax decreases, it seems like lump sum and/or targeted grants to local level governments are used to increase the supply of public goods and services in the targeted area. The marginal propensity to spend an intergovernmental grant on the targeted service is higher than to spend other income on that particular service (Gordon, 2004). This empirical puzzle was dubbed *the flypaper effect* by Arthur Okun because it seems like money "sticks where it hits" (Hines & Thaler, 1995).

A main theory, from a political economy view, why this effect occurs is that voters do not perceive and treat an intergovernmental grant to their local government in the same way as other increases of income (Fisher & Papke, 2000). Another theory is that there exists a disharmony of interest between voters and politicians or bureaucrats where the official authority tries to maximize the local public budget instead of spreading the income increase according to the population's marginal propensity to spend (Witterblad, 2008).

Hines & Thaler (1995) give an overview of evidence and explanations for the flypaper effect. They state a number of possible specification errors that might give false results that look like a flypaper effect. One of these specification errors can occur in political economy models where the median voter tax burden might be overstated in the demand function for government expenditure. Another possibility is that governments use distortionary taxes when extracting money from the population, while grants come with no deadweight loss to the receiver, and could therefore have greater stimulative effect on spending. But both these effects are usually too small explain the flypaper effect (Hines & Thaler, 1995). A third possibility is the existence of omitted variables. One example from Hines & Thaler (1995) is a copycat effect, where local authority might be encouraged to rise spending because similar local authorities are doing it.

Hines & Thaler's (1995) main theory of why the flypaper effect exists is loss aversion among the population and lack of fungibility. Loss aversion means that the political cost of raising a tax is greater than the benefit of an equivalent tax cut. And if the population does not treat funds or grants as fungible when evaluating the political leadership, it is possible for the local government to use central government grants to increase expenditures without raising taxes. The choice that is communicated to the public is how the extra money should be spent, not a choice between spending the money and cutting taxes. Witterblad (2008) argues that different types of revenues are allocated into different "mental accounts".

2.3 Earlier Studies of the Flypaper Effect

Many studies have been conducted to see whether there exists a flypaper effect and, if so, how strong it is. Hines & Thaler (1995) give a summary of some of these results. They conclude that the low-end estimate is that $1 grant increases spending by the local government with 25 cents. The high-end estimate is that the whole grant will be used to increase public spending. Theory predicts that unrestricted block grants in the U.S. would be used to increase spending with 5-10 cents on the dollar. Other earlier studies report some degree of flypaper effect, the variation in the estimates comes from "whether it is simply large or if it is enormous" (Hines & Thaler, 1995). Fisher & Papke (2000) conclude that the literature on this issue suggest that an increase in government spending due to increased intergovernmental grants usually is two to three times higher than for an increase in the private income of the population.

One study that contradicts these results is Knight (2000) who uses a legislative bargaining model. He uses the Federal Highway Program in the U.S. as a case study. By using exogenous variation in delegation of political power, he finds that intergovernmental grants crowds out local spending in a statistical significant manner. Moffitt (1984) looks at the Aid to Families and Dependent Children (AFDC) program and concludes that there are price-effects in matching grants programs that other studies have not taken into account. When the price-effects are included, the flypaper effect disappears.

Two interesting studies with respect to the case in this study is Gordon (2004) and Dahlberg et.al. (2008). Dahlberg et.al. (2008) looks at the migration parameter in the municipal equalization system in Sweden. In this system, lump sum grants are given to municipalities that have had a net out-migration of two percent or more over the last ten years. Higher out-migration gives more money, so there is a threshold and a linear increase of grants over the threshold. The finding in their study is that intergovernmental grants are crowded in,

meaning that the grants are used to increase local public spending and not to reduce local taxes.

Gordon (2004) investigates how grants in the Title I system (an education development program in the U.S.) effects spending per pupil on education over one, two and three years. The study finds evidence of a flypaper effect the first year. But a $1 increase of Title I grants also causes a 43 cent cut in support services. And over three years, there is no statistically significant crowding in of Title I grants.

This study will look at intergovernmental grants targeted to one single sector, like in Gordon (2004). The main difference is that while Title I grants are shifted according to census results every tenth year, the stimulus grants in this study was granted directly following a central government decision. This study will also use a method that is more similar to the one used in Dahlberg et.al. (2008).

3 The Stimulus Grants for Elderly Care

This chapter describes the way that the Swedish government has used intergovernmental grants to support and stimulate elderly care over the last years. Elderly care in Sweden is a public service that is provided by the municipalities. When the central government decides to support the municipalities with stimulus grants it becomes an interesting case for studying the flypaper effect.

3.1 Decision Points and Targets for the Stimulus Grants

In March 2006, the Swedish government lead by the Social Democrats, proposed an increase of resources to municipalities and counties to improve the health care for the most feeble old people (Prop 2005/06:115). In the supplement budget for 2006 (included in the so called spring budget), the government decided to introduce a stimulus grant for elderly care with SEK 600 million for the ongoing year. The spring budget also included a target of increasing the stimulus grants to SEK 1 billion for 2007 and 2008 respectively (Prop 2005/06:100). These extra resources were to be used for better rehabilitation, nutrition, medicine reviews and more contribution from physicians.

The municipalities have their budget proposals ready in October and the final budget should be decided in November the year before the fiscal year (Kommunallagen, 1990). The grants decided in the supplement budget in June 2006 for the ongoing year therefore went into municipality budgets decided almost a year earlier. But the decision also gave a hint about the budget for the coming years.

After the general election in September 2006, which was won by the so called Alliance parties (center-right), the new government decided to increase the stimulus grants for elderly care somewhat, compared to the numbers stated in the earlier spring budget. In the budget proposal for the fiscal year 2007, the new government also stated that the stimulus grants would be given also in 2008 and 2009 (Prop 2006/07:1). The stimulus grants for 2007 to 2010 have been included in the government's budget proposal, released in September the year earlier. The possibility for the municipalities to plan their activities and include the stimulus grants in their budgets was therefore much better these years.

The amount given in 2007 and 2008 was SEK 1 355 million each year and in 2009 it was SEK 1 310 million. 70 percent of the stimulus grants went to the municipalities and 30 percent to the counties (Prop 2006/07:1, Prop 2008/09:1, Swedish Government

S2006/9173/ST, Swedish Government S2009/5076/ST). The amount given to every municipality and county is based on the number of people over 65 years living there (Socialstyrelsen, 2010).

The new government also increased the number of areas within elderly care that made stimulus grants available for municipalities and counties. To the earlier targets of better rehabilitation, nutrition, medicine reviews and more contribution from physicians the new government also added development of the social contents of elderly care, dementia care and accident preemptive work (Socialstyrelsen, 2008). It is explicitly stated in the resolution from the government (Swedish Government S2006/9173/ST) that the stimulus grants are to be used as reinforcement to elderly care and not to be used as substitute for resources that the municipalities and counties are placing or plan to place at elderly care in their regular budget. The stimulus grants were to be used in specific projects that would not have been undertaken otherwise (Socialstyrelsen, 2010) and the counties and municipalities were bound to repay the grants if it was not used in the way stated in their applications (Socialstyrelsen, 2008).

These restrictions are supposed to limit the possibility to use the stimulus grants as any other increase in income. But, as in the case with infrastructure investments in Knight (2002), there is nothing that forces the municipalities to increase spending in the area with the same amount as earlier years. Many of the projects undertaken with the stimulus grants are also closely connected to the regular operation. It would be very hard for the central government to monitor that the municipalities or counties never used any of the grants to substitute for resources in their regular budget. The restrictions do not take away the possibility of crowding out local government spending.

In the budget proposal for the fiscal year 2010 the government proposed a gradual change of the stimulus package to become more and more based on results. Stimulus money was proposed to be connected with realized improvements and national targets. The amount paid to the municipalities and counties based on the number of people over 65 years was therefore lowered, in the budget proposal to SEK 980 million but in the actual decision in early 2010 it was down to SEK 680 million (Prop 2009/10:1, Socialstyrelsen, 2011). The target of more contribution from physicians was dropped in 2010 (Socialstyrelsen, 2011).

3.2 Some Results of the Projects

The National Board of Health and Welfare (Socialstyrelsen) is the public authority responsible for receiving applications for the stimulus grants, deliver the resources and to follow up the results of the projects. The results of the projects financed by the stimulus grants

have been reported annually. The reports are based on questionnaires that the municipalities and counties have answered. This subsection will give a short summary of the applications for stimulus grants and how the municipalities have used it.

All counties and all except for four municipalities applied for stimulus grants in 2006, one application was denied grants and 30 of them did not apply for the whole sum that they were entitled to (Socialstyrelsen, 2008). There was only one municipality that did not apply in 2007 and all except for one of those who applied received the full amount of grants available for them. Six municipalities did not apply for grants in 2008; all the others received the full amount. All counties and municipalities applied and received the full amount in 2009 (Socialstyrelsen, 2010). One municipality did not apply in 2010 and six municipalities did not apply for the whole amount (Socialstyrelsen, 2011)

The counties and municipalities have not been forced to use all resources in the same year as they received it. A fairly high level of resources has therefore been saved to later years. Of the SEK 600 million granted in 2006, 183 million was still not used in the end of 2007 (Socialstyrelsen, 2008). 20 percent of the total amount granted between 2007 and 2010 had not been used at the end of 2010, according to the economic statements of the counties and municipalities (Socialstyrelsen, 2011). Some of the alleged reasons were the long planning and implementation time, the shifting of project leaders, the time needed to hire new employees, and the long time it took to start projects that included more than one municipality or county. Another problem in 2009 and 2010 was that the grants were paid late those years (Socialstyrelsen, 2010, 2011).

According to the municipalities, the main result of the stimulus package is that they could hire more people in the elderly care sector, in total about 3 000 new employees. Most of the new employees have been nurses and nursing assistants. But they have also hired project leaders, occupational therapists, physiotherapists, and others. Municipalities has also been able to give employees new training and education, and provided them with new technical aid. This has been most viable in projects connected to rehabilitation and dementia care. In dementia care, some municipalities have used the new resources to try new methods in the field.

Projects regarding nutrition have mainly focused on hiring dietitians to look over the food and diet policy of the municipalities and to increase the competence about nutrition among the personnel.

Many municipalities have tried to provide more time for the personnel to have more activities together with the elderly based on the elderlies' individual requests. This has been

an important part of developing the social content of elderly care. Another way of developing the social content has been an increased cooperation with civil society organizations.

Dividing the projects into the seven targets, most projects have focused on rehabilitation (27 percent), developing the social content (19 percent), and dementia care (18 percent). Many projects have focused on more than one of the seven targets for the stimulus package, and are often seen as being successful. Of the 652 finished and graded projects in the end of 2009, 36 were said to not have reached its goals. More than half of them, 343 projects, had a better outcome than predicted, according to the counties and municipalities themselves. 68 percent of the projects that were finished in 2009 became parts of the regular operation in the counties and municipalities afterwards. The National Board of Health and Welfare take this as verification that many of the projects undertaken with help of the stimulus grants have been planned from well-known local needs (Socialstyrelsen, 2010).

4 Methodology and Data

This section describes the method and model specification used to test if there exists a flypaper effect in the stimulus grants for elderly care in Sweden. It will also describe the data that is used in the study. The former section gave a qualitative overview of some results of the stimulus grants, mainly from reports of the National Board of Health and Welfare. But qualitative analysis does not say anything about any possible flypaper effect, for this purpose there is a need for a quantitative and econometric analysis. This section will provide a framework for that analysis.

4.1 Method

There are a number of methods to study intergovernmental grants and the flypaper effect. Gordon (2004) uses a base year, the year before intergovernmental grants are changed, and then runs regressions for each of the coming three years looking at changes, compared to the base year, in revenues and spending in the counties. Dahlberg et.al. (2008) uses revenues, spending and other variables for every municipality and tests if intergovernmental grants changes tax rates and spending on public goods and services. In this study I use the later approach, because it is more natural to use the stimulus grants as a treatment to a trend.

The most basic model to examine the flypaper effect in this case would then look like Eq. 1.

$$Elderlycare_{it} = \beta_0 + \beta_1 * Stimulus_{it} + u_{it} \quad \text{(Eq. 1)}$$

In this model $Elderlycare_{it}$ is the spending on elderly care in municipality *i* in year *t*. $Stimulus_{it}$ is the stimulus grants paid to municipality *i* in year *t*. β_1 is the coefficient for the stimulus grants on elderly care spending, β_0 is the constant and u_{it} is the error term.

A model like this must of course be expanded with other variables that might be correlated with elderly care spending and the stimulus grants. Gordon (2004), looking at Title I grants to schools in the U.S. adds other variables such as revenue on state and local government level and enrollment. Dahlberg et.al. (2008), who study the migration parameter in the municipality equalization system, adds variables such as proportion of population in school age and of elderly, share of foreign born and tax power.

This study will use a model that will look for the trend of costs for elderly care based on a linear and a quadratic time trend, the municipality revenue and tax power. The stimulus grants

are the treatment included in the model and it will make it possible to say whether the stimulus grants have had any effect on the costs for elderly care. Depending on the strength of the results it might also be possible to give an estimate about how strong a possible flypaper effect is in this case.

The revenue variable is supposed to capture tax rates, general grants, grants through the municipality equalization system and more. The tax power variable captures growth, local unemployment and also inflation.

A variable for proportion of elderly people might also be of interest but is excluded since the stimulus grants are based on the number of elderly people living in each municipality (Socialstyrelsen, 2010). The correlation between the stimulus grants per inhabitant and the proportion of elderly is over 0.9 in each year. But the fact that municipalities with a higher proportion of elderly people generally have higher costs for elderly care will be captured in this model when fixed effects are included for all municipalities.

As described in section 3.2 all municipalities have not applied for the stimulus grants every year and not always for the whole allowance. The National Board of Health and Welfare does not keep record of which municipalities did not apply for the stimulus money. The measure used for the stimulus variable is the grants that each municipality was entitled to in each year. The grants actually paid could maybe be a better measure. But those statistics are unfortunately not available, and in more than 95 percent of the cases the municipalities did apply for and received the whole amount that they were entitled to.

The municipalities have also been able to postpone the use of the stimulus money to later years. Some costs of projects paid with the stimulus money are therefore reported in later years than it was granted. This might alter the stimulus variable's effect on elderly care spending in this study. But since this study looks at what happens with the costs of the whole elderly care sector in the municipalities, and not only in these projects, it is still valid to examine the effect of the stimulus grants on elderly care spending. The question whether stimulus money is crowding in or crowding out other resources does not become invalid when municipalities roll over costs between years, it might in fact be a way of crowding out.

I will also conduct a robustness test adding a variable with lagged stimulus grants to see if elderly care spending might be effected by the stimulus grants the year earlier. This variable might also capture if municipalities increase spending in elderly care when making finished projects part of the regular operation. This test is done in the last stage of the analysis.

The dataset that is used here is a combination of time series and cross-section data, so called panel data. The appendix shows data for six of the municipalities. Looking at these six

municipalities it can be seen that the stimulus grants have been around 0.5 percent of total spending on elderly care in 2006 and 2010 and around 1 percent in 2007 to 2009.

I will apply this dataset to a model that fits a trend line for the cost of elderly care over the sample period. By adding the stimulus grants as a variable it will be possible to see if the grants have a significant effect on the cost of elderly care and how strong that effect might be. The basic model, Eq. 1, is therefore expanded with two time trend variables, one linear and one quadratic, two other explanatory variables, revenue and tax power, and the treatment variable, the stimulus grants.

When fitting a trend line in this panel data set I have to take into account that municipalities start with different conditions, depending on things like proportion of elderly people, tax rate and unemployment. Therefore I make the assumption that the slope coefficients are constant but that the intercept (β_0) varies between municipalities (i). A regular OLS regression is no longer an option. A fixed effects, or least-squares dummy variable (LSDV), regression model is more accurate in this case (Gujarati, 2003).

The main reason why one municipality has a higher cost for elderly care per inhabitant than another is that it has a higher proportion of elderly people living there. By using fixed effects for municipalities the proportion of elderly people is taken into account in the intercept but not in the variables, which makes it possible to analyze the effect of the stimulus grants even though it is correlated with the proportion of elderly people. Using fixed effects also makes it possible to include both the revenue and the tax power variable. Without the fixed effects there would be a problem with the fact that municipalities with a smaller tax power are given more grants through the municipality equalization system. The variables would equalize each other somewhat in every single year. But fixed effects make the regression focused on the trend from year to year for the single municipality, also in these variables.

The way of introducing fixed effects into the model is done through dummy variables. One dummy variable is introduced for every municipality except the last one, to avoid a so called dummy-variable trap (Gujarati, 2003). Eq. 2 shows the model. Since I am not interested in the coefficients of the dummy variables I specify the model by writing $|FE|_i$. The dummies are only there to give better estimations of the other coefficients.

$$Elderlycare_{it} = \beta_0 + \beta_1 * Revenue_{it} + \beta_2 * Taxpower_{it} + \beta_3 * Stimulus_{it} + \beta_4 * Year_t + \beta_5 * Year_t^2 + |FE|_i + u_{it}$$

Eq. 2

The meaning of this model is that an increase of SEK 1 in the variables revenue, tax power and stimulus increases spending on elderly care with the amount of that variables coefficient.

Working with a panel data set I need to consider the risk of autocorrelation in the model, meaning that there might be correlation between observations ordered in time. It is possible that the error term relating one observation might be influenced by the error term relating to another observation (Gujarati, 2003). In this case with panel data this autocorrelation would then be found in each panel (municipality).

To see if there is autocorrelation in the data I will run two tests for first-order autocorrelation. First-order autocorrelation means that the error term, u_{it}, is correlated with the error term of the observation at *t-1*, $u_{i,t-1}$. According to Wooldridge (2002), one test for first-order autocorrelation in a panel data set is to run a pooled OLS regression with robust standard errors with the fixed effects residuals as the dependent variable and the lagged fixed effects residuals as the explanatory variable. The model is given in Eq. 3. The model is run from *t=3*, because in a fixed effects model it is only possible to estimate the time-demeaned errors, $\ddot{u}_{it}$. And if u_{it} are uncorrelated for *t=2*, the time demeaned errors will be negatively correlated. Therefore it is pointless to use $\ddot{u}_{it}$ for *t=2* when testing for autocorrelation (Wooldridge, 2002).

$$\hat{u}_{it} = \delta_0 + \delta_1 * \hat{u}_{i,t-1} + \varepsilon_{it} \qquad t = 3, \dots, T \qquad i = 1, \dots, N$$

Eq. 3

If δ_1 is significantly different from zero, it can be assumed that there is autocorrelation present in the data. This test is rather simple and does not produce an optimal test of autocorrelation, but good enough to indicate a problem (Wooldridge, 2002).

The second test is called the Wooldridge test and uses the residuals from a first-difference regression. The regression in this case is given in Eq. 4. The parameters, $\beta_1 - \beta_5$, are estimated and the residuals, $\hat{u}_{it}$, are obtained. The correlation between the first-differenced residuals and the lagged first-order residuals should be -0.5 if there were no first-order autocorrelation. Therefore it is possible to test for autocorrelation by regressing the residuals from Eq. 4 with the lags of the residuals (Drukker, 2003). This model is given in Eq. 5.

$$\Delta Elderlycare_{it} = \beta_1 * \Delta Revenue_{it} + \beta_2 * \Delta Taxpower_{it} + \beta_3 * \Delta Stimulus_{it} + \beta_4 * \Delta Year_t + \beta_5 * \Delta Year_t^2 + \Delta u_{it}$$

Eq. 4

$$\hat{u}_{it} = \delta_1 * \hat{u}_{i,t-1} + \varepsilon_{it}$$

Eq. 5

Eq. 4 looks similar to Eq. 2, but note that in this test it is first-differenced variables that is used. Using first-differenced variables removes the individual-level effect, the term based on the time-invariant covariates and the constant (Drukker, 2003). If δ_1 is significantly different from -0.5 there is first-order autocorrelation in the data. Running this test in Stata gives the result as an F-test with the null hypothesis of no first-order autocorrelation (Drukker, 2003).

If the tests for first-order autocorrelation imply that there is autocorrelation in the data I will run a new regression using a first-order autoregressive scheme, usually called AR(1). This model starts by estimating the coefficient of autocovariance, ρ, from Eq. 6.

$$u_{it} = \rho * u_{i,t-1} + \varepsilon_{it} \qquad -1 < \rho < 1$$

Eq. 6

The coefficient for autocovariance, ρ, is then used to calculate new estimates for the coefficients in the model. Using the coefficient for the stimulus variable as an example, the estimator of β_3 would then be given by Eq. 7 and Eq. 8.

$$\hat{\beta}_3 = \frac{\sum_{t=2}^{n}\left(Stimulus_{it} - \rho * Stimulus_{i,t-1}\right) * \left(Elderlycare_{it} - \rho * Elderlycare_{i,t-1}\right)}{\sum_{t=2}^{n}\left(Stimulus_{it} - \rho * Stimulus_{i,t-1}\right)^2} + C$$

Eq. 7

$$var\left(\hat{\beta}_3\right) = \frac{\sigma^2}{\sum_{t=2}^{n}\left(Stimulus_{it} - \rho * Stimulus_{i,t-1}\right)^2} + D$$

Eq. 8

C and D are correction factors that can be disregarded in practice (Gujarati, 2003).

Running a regression using this first-order autoregressive scheme will give estimates of the coefficients that are adjusted to incorporate the autocorrelation parameter, ρ, and therefore give a more precise result.

The model run with an AR(1)-scheme would be given by Eq. 9.

$$Elderlycare_{it} = \beta_0 + \beta_1 * Revenue_{it} + \beta_2 * Taxpower_{it} + \beta_3 * Stimulus_{it} + \beta_4 * Year_t + \beta_5 * Year_t^2 + |FE|_i + u_{i,t-1} + \varepsilon_{it}$$

Eq. 9

Two robustness tests will be run to see if the estimate of the stimulus grants in Eq. 2 or Eq. 9 is still valid when excluding the quadratic time trend and when including a third degree polynomial time trend. This is done to see if it is possible that the original model capture too much or too little of the time trend.

4.2 Collection and Management of Data

The stimulus grant for elderly care has, as described earlier, been given both to municipalities and to counties, with approximately 70 percent going to the municipalities. This study is focused on municipalities, so when collecting data I have excluded the counties from the beginning.

I have mainly used data from Statistics Sweden (SCB) and the Swedish Association of Local Authorities and Regions (SKL). For exact data on how much each municipality has been given in stimulus grants I have looked at government resolutions (Swedish Government S2006/9173/ST, S2009/5076/ST, Socialstyrelsen 2006, and Swedish Social Ministry press release 2010-02-28) from each year. Then I have calculated how much stimulus grants have been given per inhabitant.

From SKL's yearly report *Vad kostar verksamheten i din kommun* (How much does the local operations cost) I have taken data for the costs of elderly care per inhabitant. This variable is total costs and therefore it also includes costs that are covered by fees and targeted grants, for example the stimulus grants. This specific data were not available before 1999 when it was reported together with costs for care of disabled people. Therefore I have limited the data collection and the study to the years 1999 to 2010.

To calculate the revenue variable I have used SCB's data on municipalities' finances. I have added tax revenue, general grants (including the municipality equalization payments) and financial income. All numbers are per inhabitant. General grants do not include the stimulus grants for elderly care and other targeted resources. The tax power variable is also collected from SCB's data on municipalities' finances and is expressed per inhabitant. Table 1 summarizes the statistics used in this study. The mean value, standard deviation, min and max are given in SEK.

	Obs	Mean	Std. Dev.	Min	Max
Elderly care	3317	10289	3222	2268	26565
Revenue	3474	38795	6863	22834	63376
Tax base	3476	130135	25779	76908	313423
Stimulus	3479	38.12	52.07	0	232

Table 1, Summarized Statistics

Since there are 290 municipalities in Sweden there should be 290 observations for each year, 3480 in total, if the dataset were complete. But as one can see in Table 1, this is not the case in this dataset. One municipality (Knivsta) was created in 2003, and has missing values before that for obvious reasons. More attention has to be given to the fact that data is missing for one or more variables for many municipalities some years. The most common is that some municipalities have not reported the cost of elderly care separately in the first year or years after 1999. The number of observations for each year is given in Table 2. The number of observations is still large every year and there are no signs of any pattern or any special type of municipalities that have missing values.

	No. of observations
1999	223
2000	246
2001	266
2002	280
2003	286
2004	286
2005	287
2006	288
2007	286
2008	289
2009	290
2010	290
Total	3317

Table 2, No. Of Observations per Year

One municipality (Emmaboda) only has two observations. All the other municipalities have at least seven observations and 190 of them have observations for the whole time period. The analysis will be based on all observations. But, as a robustness test, I will also run the regression and the robustness tests only using the municipalities that have observations for the whole period.

5 Analysis and Findings

I will begin my analysis with a simple graphical analysis before going into the regression and the robustness tests. The graphical analysis is done for two reasons. First to see if it might be possible to see a flypaper effect already in the graph and secondly to see if a linear and/or quadratic time trend can be found there.

5.1 Graphical Analysis

This graphical analysis shows the average cost of elderly care for each year in the period that I analyze and the total amount of stimulus grants paid to municipalities from 2006 to 2010. The mean values and standard deviation of elderly care costs are shown in Table 3 and total stimulus grants for municipalities are shown in Table 4. The mean values of elderly care costs are plotted in Figure 1 together with the total stimulus grants.

	Mean Cost for Elderly Care	Std. Dev
1999	7961	2278
2000	8389	2357
2001	9185	2609
2002	9568	2697
2003	10011	2855
2004	10042	2834
2005	10214	3015
2006	10655	3141
2007	11082	3257
2008	11710	3435
2009	11775	3431
2010	11944	3410

Table 3, Mean and Standard Deviation for Elderly Care Costs, SEK

	Total Stimulus
2006	419.0
2007	946.6
2008	946.6
2009	915.1
2010	474.6

Table 4, Total Stimulus for Municipalities per Year, mSEK

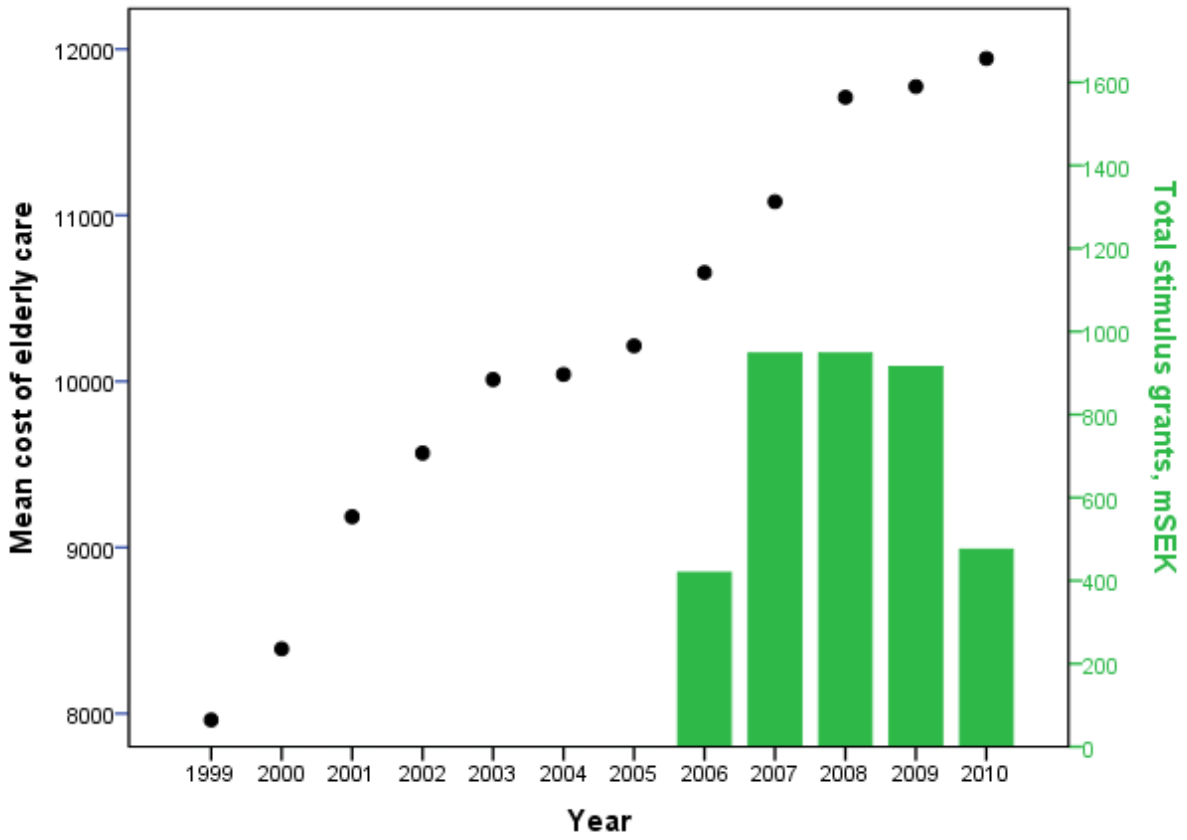

Figure 1, Total stimulus grants and mean cost for elderly care

As seen in Figure 1, there seems to be a positive trend in the costs for elderly care. It is not possible to exclude a quadratic time trend since the positive trend is decreasing both in the middle of the time period, just before the stimulus grants are introduced, and in the end of the time period. If there is a quadratic time trend in the costs it looks likely that the introduction of the stimulus grants in 2006 and onward can have shifted the trend upwards.

With the upward shift taking place in 2006, when the stimulus grants are introduced, it seems likely that there is a flypaper effect involved here.

5.2 Econometric Analysis

This econometric analysis will begin with the two tests for autocorrelation. If there is autocorrelation in the data I will make corrections for that using the AR(1)-scheme. Thereafter I will run the regression and two robustness tests using different time trend variables. After that the regression and the robustness tests will be run again but only using the municipalities with no missing values. Finally I will add a variable with lagged stimulus grants and test this model for autocorrelation before running the regression both with the full data set and with the data set excluding municipalities with missing values. In the end I hope

to be able to give an answer to the question whether there exist a flypaper effect for the stimulus money for elderly care and, if so, how strong it might be.

To test for autocorrelation I run the fixed effects regression for the model in Eq. 2 and obtain the fixed effects residuals. Then I run a pooled OLS regression with robust standard errors, Eq. 3, with the observed error term as the dependent variable and the lagged error term as the explanatory variable. The coefficient for the lagged error term should not be significantly different from zero if there were no first order autocorrelation in data. The result of this test is given in Table 5. The hypothesis of no first order autocorrelation, $\delta_1 = 0$, is strongly rejected.

Error_lag	0.6117***
	(0.0227)
Constant	19.24**
	(8.763)
No. of obs	2776
R^2	0.3612

Notes: OLS regression with robust standard errors.
*** Significance at the 1 percent level
** Significance at the 5 percent level
* Significance at the 10 percent level

Table 5, Estimated Effect of Lagged Error Term on Error Term from the Original Model

Table 6 gives the result of the Wooldridge test for first order autocorrelation in panel data. The coefficients here are of no interest for the results of this study since the variables are first differences which are used solely to test for autocorrelation. The interesting values are in the last two rows where an F-value is given together with a probability of holding on to the hypothesis of no first order autocorrelation. This test also shows strong evidence of first order autocorrelation in the model. To correct for this I will run the regression and the robustness tests with a first-order autoregressive scheme, AR(1).

ΔRevenue	0.0969***
	(0.0149)
ΔTaxpower	-0.0241***
	(0.0059)
ΔStimulus	1.4664***
	(0.3293)
ΔYear	426.0***
	(50.99)
ΔYear²	-7.7430
	(1.2060)
No. of obs	2983
R^2	0.3641
F(1, 288)	187.85
Prop > F	0.0000

Notes: Variables are in first-difference. H0: no first order autocorrelation. H0 is rejected at a 1 percent significance level if Prop > F is smaller than 0.01.

*** Significance at the 1 percent level
** Significance at the 5 percent level
* Significance at the 10 percent level

Table 6, Wooldridge Test for First-order Autocorrelation

I run the original model corrected for autocorrelation, Eq. 9, following the method outlined in section 4.1. The results are given in Table 7, column (1). The time trend variables are negative but insignificant. A negative linear time trend variable would imply that elderly care spending would decrease over time in proportion to the municipalities' revenue and the tax power of the inhabitants. A negative quadratic time trend imply that increases in elderly care spending are diminishing over time.

Most interesting and maybe also most surprising in these results is the strong coefficient for the stimulus grants. According to this regression the stimulus grants would have generated a SEK 2.43 increase in elderly care spending for every krona granted. The other two variables also have significant positive coefficients in a range that intuitively seems likely. The coefficient for revenue is significant at a one percent level and the coefficient for tax power is significant at a five percent level. Spending on elderly care would, according to this model, increase with 13.96 percent of an increase in the municipalities' revenue and with 1.08

percent of an increase in the tax power. The main finding of this regression is that the stimulus money gives a strong effect of over 200 percent. This implies a strong flypaper effect of the stimulus money for elderly care.

	(1)	(2)	(3)
Revenue	0.1396***	0.1398***	0.0861***
	(0.0010)	(0.0099)	(0.0108)
Taxpower	0.0108**	0.0110***	-0.0213***
	(0.0043)	(0.0039)	(0.0050)
Stimulus	2.4315***	2.4594***	4.3267***
	(0.3550)	(0.3120)	(0.3797)
Year	-8.705	-21.49	2678.2***
	(86.35)	(27.11)	(245.7)
$Year^2$	-0.5479		-271.9***
	(3.5919)		(23.55)
$Year^3$			10.31***
			(0.8835)
Constant	3633.7***	3651.4***	177.7
	(129.3)	(121.0)	(152.6)
No. of obs	3027	3027	3027
No. of groups	290	290	290
R^2	0.2904	0.2911	0.3393

Notes: Fixed effects regressions with first order autoregressive scheme. Standard errors are given in the parenthesis. (1) Gives the results of the original model, (2) is a robustness test excluding the quadratic time trend, and (3) is a robustness test including a third degree polynomial time trend.

*** Significance at the 1 percent level
** Significance at the 5 percent level
* Significance at the 10 percent level

Table 7, Estimated Effect of Revenue, Tax Power, Stimulus Grants and Time Trends on Elderly Care

Column (2) and column (3) in Table 7 give the results of the robustness tests. The quadratic time trend is excluded in column (2) which does not have any effect on the other variables. Column (3) includes a third degree polynomial time trend which makes a significant difference on all the estimates.

One possible problem with the model in column (3) is that the time trends explain too much of the variation in the other variables. It seems like they capture much of the changes in income, tax rates, growth, unemployment and inflation, therefore lowering the estimated coefficients for revenue and tax power. One result of this problem is that the coefficient for tax power becomes significantly negative which does not make any economic sense. The revenue coefficient is lowered while the coefficient for the stimulus grants is nearly doubled. Since the first test does not change the result and the second might capture too much variation in the time trends there are no reasons to reject the estimate of the stimulus grants given in the original model at this stage.

	(1)	(2)	(3)
Revenue	0.0687***	0.0719***	0.0711***
	(0.0124)	(0.0124)	(0.0124)
Taxpower	-0.0158***	-0.0181***	-0.0218***
	(0.0054)	(0.0054)	(0.0057)
Stimulus	2.5145***	2.0085***	3.9475***
	(0.3979)	(0.3524)	(0.5421)
Year	-8.8477	250.1***	2497.3***
	(103.7)	(41.88)	(657.0)
Year²	12.36***		-236.0***
	(4.528)		(64.74)
Year³			8.69***
			(2.28)
Constant	9396.5***	8260.0***	599.7
	(200.7)	(171.0)	(626.5)
No. of obs	2090	2090	2090
No. of groups	190	190	190
R^2	0.2690	0.2670	0.2895

Notes: Fixed effects regressions with first order autoregressive scheme. Standard errors are given in the parenthesis. (1) Gives the results of the original model, (2) is excluding the quadratic time trend, and (3) is including a third degree polynomial time trend.

*** Significance at the 1 percent level
** Significance at the 5 percent level
* Significance at the 10 percent level

Table 8, Robustness Tests Only Using Municipalities Without Missing Values

Table 8 presents three other robustness tests. These regressions are comparable with the ones presented in Table 7, but now I am only using data from the municipalities with a full set of observations. Column (1) gives the estimates when using the original model while column (2) excludes the quadratic time trend and column (3) includes a third degree polynomial time trend.

It seems like the time trend variables are capturing more of the variance in all of these three regressions. The tax power estimate is significantly negative in all three, which does not make any economic sense. The revenue variable is nearly halved compared with the regressions with all observations, but still significantly positive. But, looking at the coefficients for the stimulus grants does not give any reason to reject the estimate from the original model, since the estimates in Table 8 are pretty much the same as in Table 7.

Since the municipalities had the possibility to use the stimulus grants in later years and that finalized projects often were included in the regular operation I will finish this analysis by adding lagged stimulus grants as a variable to the original model. The model would then be specified as Eq. 10.

$$Elderlycare_{it} = \beta_0 + \beta_1 * Revenue_{it} + \beta_2 * Taxpower_{it} + \beta_3 * Stimulus_{it} + \beta_4 * Stimulus_{i,t-1} + \beta_5 * Year_t + \beta_6 * Year_t^2 + |FE|_i + u_{it}$$

Eq. 10

Error_lag	0.5613***
	(0.0231)
Constant	14.83*
	(8.613)
No. of obs	2776
R^2	0.3107

Notes: OLS regression with robust standard errors.

*** Significance at the 1 percent level

** Significance at the 5 percent level

* Significance at the 10 percent level

Table 9, Estimated Effect of Lagged Error Term on Error Term from the Model with Lagged Stimulus Grants

Including a lagged variable could have an effect on the autocorrelation problem. Therefore I run the two tests for autocorrelation outlined in section 4.1. The result of testing lagged error terms on the error term is given in Table 9. The hypothesis of no first order autocorrelation is rejected at a one percent level. The Wooldridge test gives an F-value of 156.8 and the null hypothesis of no first order autocorrelation is rejected. Therefore I use an AR(1)-scheme also in this robustness test.

The results are presented in Table 10. Column (1) gives the results when using all observations and column (2) when excluding municipalities with missing values.

	1	2
Revenue	0.1198***	0.0584***
	(0.0098)	(0.0126)
Taxpower	0.0196***	-0.0098*
	(0.0041)	(0.0056)
Stimulus	0.5271	1.1947***
	(0.3770)	(0.4378)
Stimulus_lag	5.8369***	5.2978***
	(0.4579)	(0.5163)
Year	118.0	-145.3
	(80.59)	(111.7)
Year²	-13.51***	12.73**
	(3.520)	(5.327)
Constant	2905.5***	9958.7***
	(127.8)	(255.0)
No. of obs	3027	1900
No. of groups	290	190
R^2	0.3499	0.3377

Notes: Fixed effects regressions with first order autoregressive scheme. Standard errors are given in the parenthesis. (1) Gives the results from the model with all observations and (2) gives the results from the model only using data from municipalities with full set of observations.

*** Significance at the 1 percent level
** Significance at the 5 percent level
* Significance at the 10 percent level

Table 10, Robustness Tests Including a Variable for Lagged Stimulus Grants

The estimate for the lagged stimulus grants variable is significantly positive and much higher than the estimate for stimulus grants both in these regressions and in the earlier ones. The results from Table 10 imply that the stimulus grants generate spending increases of more than five times the sum granted the previous year. The result for the stimulus grants given during the ongoing year are mixed in these two regressions. When using all the observations it is 0.5 and insignificant. Excluding all municipalities with missing values the estimate is 1.19. These results still imply that the stimulus grants are crowding in local government spending, but the estimates are smaller and less significant than in the earlier regressions.

The finding of this strong estimate for the lagged stimulus grants is of course also to be seen as crowding in of local government spending. Comparing for example with Gordon (2004) that finds that Title I grants is crowding out local government spending over time, the result in Table 10 imply that the stimulus grants for elderly care is crowding in local government spending over time. In this case it seems like the flypaper effect is stronger the year after the grants were paid.

There can be many explanations for this finding. One is of course that some projects are not conducted in the year that the money was granted, another is that projects that are finalized becomes part of the regular operation without crowding out other spending. The copycat effect might also be stronger over time. If political leaders or bureaucrats in one municipality notice a successful operation in another municipality they might be more willing to spend more to achieve the same results.

The main finding in this analysis is that the stimulus grants for elderly care come with a strong flypaper effect. It can be found in the estimate for the stimulus grants in all regressions run without the lagged stimulus grants. When lagged stimulus grants are included in the model the flypaper effect is stronger in that variable's estimate.

6 Conclusion

In this section I will summarize and give some concluding remarks before making some suggestions for future research.

This thesis started with an overview of the economic theory that implies that intergovernmental grants are crowding out local government spending and empirical findings that show the opposite; that intergovernmental grants are crowding in local government spending. This empirical puzzle is often called the flypaper effect since it seems that "money sticks where it hits". The stimulus grants for elderly care used by the Swedish government to increase the performance in elderly care have been given to municipalities in proportion to the number of people over 65 years old living there and is used as a case study in this thesis.

The research question for the study is: Have stimulus grants for elderly care crowded in or crowded out local government spending? I have used a fixed effects regression model that is corrected for autocorrelation to fit a trend for elderly care spending. If the stimulus grants shift the trend upwards when included in 2006 and onward it indicates that the grants are crowding in local spending.

Both the graphical analysis and the regression results point in the direction of crowding in. Just looking at Figure 1 gives a hint that something happened in 2006 that made the spending on elderly care to increase. The diminishing increases of spending ends and the spending starts to increase more sharply before diminishing again in 2009 and 2010. Talking about 2009 and 2010 one should also remember the economic crisis that hit the world and also the Swedish municipalities that therefore became more reluctant to spending increases.

The regression model implies that the stimulus grants for elderly care have crowded in government spending at a large scale. The effect is estimated to be 2.43, a result that still is valid after a couple of robustness tests. The only test that changes this result is when lagged stimulus grants are included. Then the stimulus grants paid in year *t-1* (the previous year) has an estimate over 5 while the stimulus grants paid in year *t* (the ongoing year) has a much lower estimate compared with the model without lagged stimulus grants. This finding implies that the projects undertaken with the stimulus grants increases elderly care spending of the municipalities when they include the projects in their regular operations.

The literature on the flypaper effect usually talks about a flypaper effect of 1, or dollar for dollar, as a huge flypaper effect. In this case the estimated effect would imply that the local governments are not only using all the stimulus grants in the targeted sector, they also put in

the same amount or more by themselves. This result of course contradicts economic theory of intergovernmental grants and is strengthening the case for using intergovernmental grants to reach targets in different sectors.

This study is built entirely on statistics; therefore it might have been changes in regulations that effected spending on elderly care that have not been taken into account in the analysis. The Swedish government proposal for a National development plan for elderly care in 2006 (prop 2005/06:115) does increase some responsibilities for the municipalities, but that is also one of the reasons for the introduction of the stimulus grants. Looking at the reforms made in the area of elderly care during 2006 and 2007 (prop 2005/06:115, 2006/07:1 and more), I would say that the stimulus grants stand out as the most important.

Another possible explanation for some of the increased spending that I have not looked into is media coverage or other outside pressure that could have increased the willingness among local politicians to spend more on elderly care. The copycatting effect mentioned in section 2.2 might also be an explanation for the increased spending.

Even though there might be some more explanations for the increased spending on elderly care than the stimulus grants, this study still shows a strong result that implies that targeted grants to local governments stick where they hit.

The Swedish government uses different kinds of grants when supporting municipalities and counties. This thesis has focused on targeted grants for a separate sector. Other types of grants are general grants, like the stimulus money given to municipalities in the economic crisis in 2010, and the municipality equalization system. Studies of the result of the general stimulus grants in 2010 could give insights about how the flypaper effect works for general lump sum grants.

Another type of intergovernmental grants used in Sweden is result based grants. The stimulus grants for elderly care will in the future be based on performance and kömiljarden (the queuing billion) has been a major part of the Swedish government's health care policy the last couple of years. A study of how these grants are used once the performance target is reached and the money is granted could be of interest. With such a study one could compare the efficiency of targeted grants and result based grants.

Since the result of this study is very strong it might be of interest to investigate the reasons behind this strong result, maybe in a more qualitative way. One way to start could be to look for a copycatting effect. It could also be of interest to look for differences for example between Sweden and U.S. regarding how much local governments spend out of intergovernmental grants.

7 References

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Appendix

In this appendix I present the dataset for six randomly chosen municipalities. Two of them have missing values for elderly care spending. The values are given in SEK.

Upplands Väsby

Year	Elderly Care	Revenue	Tax power	Stimulus
1999	3707	27025	121349	0
2000	4496	28230	125823	0
2001	5146	29604	132606	0
2002	5155	30665	142482	0
2003	5393	31518	153912	0
2004	4640	31603	159268	0
2005	4807	33930	162110	0
2006	5352	35822	164191	25
2007	5473	38125	168111	56
2008	6115	39449	172768	56
2009	6304	39513	180896	53
2010	6043	41389	188830	30

Värnamo

Year	Elderly Care	Revenue	Tax power	Stimulus
1999	7390	28846	103700	0
2000	6985	30646	106962	0
2001	7712	32474	113424	0
2002	8482	34248	120369	0
2003	9142	34939	126882	0
2004	9401	36425	133886	0
2005	9369	38521	139077	0
2006	9791	40552	143372	50
2007	10164	42223	148756	112
2008	10902	44112	154055	112
2009	10845	45085	161576	109
2010	10486	46578	170322	56

Malmö

Year	Elderly Care	Revenue	Tax power	Stimulus
1999	6966	30510	95292	0
2000	7334	32478	99463	0
2001	7084	34459	104012	0
2002	8347	35714	111102	0
2003	8676	36117	117021	0
2004	8598	36147	122837	0
2005	8629	37711	127706	0
2006	8830	39144	130369	50
2007	7686	40746	134267	112
2008	8845	42551	138739	109
2009	8747	42657	144245	103
2010	9251	44368	148910	52

Herrljunga

Year	Elderly Care	Revenue	Tax power	Stimulus
1999	10121	28010	88488	0
2000	..	30293	93116	0
2001	..	32545	97940	0
2002	10399	34505	103667	0
2003	11135	35772	109783	0
2004	11114	35992	117035	0
2005	11645	39004	124899	0
2006	12756	40753	130027	55
2007	12759	41188	135792	123
2008	13034	43493	141865	123
2009	12718	43105	148086	118
2010	12663	45327	155042	59

Karlstad

Year	Elderly Care	Revenue	Tax power	Stimulus
1999	6738	28804	106957	0
2000	6994	30439	111017	0
2001	7237	31742	115849	0
2002	7165	32931	122718	0
2003	7646	34257	129189	0
2004	7969	34777	136175	0
2005	8143	37984	141494	0
2006	8120	38253	145852	44
2007	8029	40309	151256	99
2008	9112	42965	155838	99
2009	8989	42390	161373	95
2010	8995	43902	168893	50

Dorotea

Year	Elderly Care	Revenue	Tax power	Stimulus
1999	12213	43115	86000	0
2000	..	43523	90999	0
2001	14079	46824	96298	0
2002	14935	51065	99251	0
2003	16963	50222	105897	0
2004	16497	52913	112182	0
2005	17215	55877	119793	0
2006	17589	56930	127774	98
2007	19103	59628	131455	226
2008	21486	63376	130539	232
2009	19997	61954	141913	226
2010	20476	62347	151069	113