

Intergovernmental Grants and Local Public Expenditure: Spending Decisions and Information Spillover Effects

Lena Catharina Birkelöf*

Department of Economics, Umeå University

SE-901 87, Umeå, Sweden

Abstract:

This empirical study takes advantage of a new intergovernmental grant in order to investigate the expenditure behavior of the municipalities in Sweden in two ways. First, the grant is used to study the effect on municipal spending related to the grant. Second, the grant is used to test a hypothesis of spatial interaction among municipalities due to mimicking behavior. The grant and expenditures studied here pertain to one specific service area of the Swedish municipalities; services to functionally impaired individuals. The grant was introduced in 2004. The data used pertains to the period before (2001-2003) and after (2004-2007) the introduction of the grant. A fixed-effects spatial lag model is used to study the (possible) spatial interactions among municipalities. Interestingly, the results show that during the first time period, the municipalities interact with their neighbors when setting the expenditure level, possibly due to mimicking. In the second time period, after the introduction of the grant, there is no evidence of interaction. This would support the hypothesis that the governmental grants provide information to the municipalities and the need for mimicking diminishes with the grant.

Keywords: Local public expenditures, Intergovernmental grants, Spatial Interaction

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* E-mail: lena.birkelof@econ.umu.se Phone: +46 (0)90786 6547. Fax +46 (0)90 772302.

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1. Introduction

The aim of this paper is to study the effect of a new intergovernmental grant distributed to Swedish municipalities. Two channels through which grants can affect public spending are hypothesized. First, similar to previous studies on intergovernmental grants, the effect of the grant on related public expenditure is studied. Second, and unlike other studies on intergovernmental grants, this study will also focus on the information and design of this particular grant and study if it makes municipalities change their level of interaction among each other.

Studies on intergovernmental grants usually address the effects on local public expenditures of the grant. While economic theory predicts that an increase in unconditional grants to a local jurisdiction should have the same effect as an equivalent increase in income (Bradford and Oates, 1971 a,b), empirical work on intergovernmental grants usually find that public spending from grants exceeds that from equivalent increases in income. This empirical phenomenon is labeled the *flypaper effect* since “money sticks where it hits”.¹ There are several studies on federal grants and local public expenditures in the literature. In a study on American data, Knight (2002) incorporates the political determination of federal grants and the effects of these grants on state policies, and finds that federal highway grants decrease state highway spending. Swedish studies include Dahlberg, Mörk, Rattsö, Ågren (2007) who study the effect of federal grants on the behavior of lower level governments. They find evidence of federal grants being used to increase local spending, but not to reduce the local tax rate. On the other hand, Wikström (2007) finds that an intergovernmental grant toward public childcare did not affect the per-child expenditure, but it did affect the municipal tax rate. For surveys of the literature on intergovernmental grants, see e.g. Hines and Thaler (1995), and Oates (1999).

There are reasons to believe that local governments, such as municipalities, are interdependent when making expenditure decisions, deciding on the tax policy, or setting welfare levels. The interaction arising from the interdependence among the municipalities could be due to, for example, mimicking, competition, or spillover among the municipalities. This interaction could also have a spatial dimension. For one thing, the decisions made by a local government can also

¹ Arthur Okun’s observation “money sticks where it hits” was named “flypaper effect” by Courant, Gramlich and Rubinfeld’s (1979).

have consequences for surrounding jurisdictions, not only the own jurisdiction.² However, the spatial interaction must not necessarily be specific in a geographical context; other forms of closeness are also possible.³ One of the first papers of spatial interaction is the study by Case, Hines and Rosen (1993), where they use a spillover model to study the budget spillover among U.S. states. Their results indicate that a state's government level of per capita expenditure is positively and significantly affected by the expenditure levels of its neighbors. Since the study by Case et al., there have been an increasing number of studies that include spatial interaction. For example, Dahlberg and Edmark (2008) find that there exists a "race-to-the-bottom" among neighboring municipalities regarding the welfare level; a municipality's welfare level is positively and significantly affected by the welfare level in neighboring municipalities. For other studies on welfare and tax competition, see e.g. Revelli (2005) and Allers and Elhorst (2005). In a study on local public expenditure in the Czech Republic, Stastna (2009) finds a positive spatial autocorrelation for expenditure on housing and culture, possibly due to mimicking; while negative spatial autocorrelation is found for the expenditure on industry, infrastructure and environmental protection, which is consistent with the spillover hypothesis. For other studies on spatial spillover, see e.g. Murdoch, Rahmatian and Thayer (1993), Hanes (2002), and Lundberg (2006).

National governments sometimes impose new duties and responsibilities on local governments. One way of financing these new duties is by intergovernmental grants to the local governments. In this paper, one such intergovernmental grant is studied. This grant is associated with expenditures for one specific service area of the Swedish municipalities; services to functionally impaired individuals. The responsibility for these services, called LSS-services, was transferred to the municipalities in 1994 via a government reform (LSS-act 1993:387).^{4,5} The LSS-act is an entitlement law that gives individuals with functional impairments the right to obtain support and services to obtain equal opportunities in living conditions and full participation in the community. Ever since the introduction of the LSS-act, there has been an increase in the expenditure for the services. The intergovernmental grant studied in this paper was introduced in 2004 as a response to the increased expenditure for the LSS services. In this paper, it is studied

² See e.g. Wilson (1999) for a review of the literature on tax competition and Brueckner (2003) for a description of the theoretical frameworks for strategic interaction among local governments.

³ For example, spatial interaction could be modeled as political or economical closeness.

⁴ The LSS-act stands for "The Act Concerning Support and Service for Persons with Certain Functional Impairments" (*in Swedish: Lag om stöd och service till vissa funktionshindrade*).

⁵ See Birkelöf (2008) and for a more detailed description of the services to functional impaired.

how the grant affects the local governments' decisions with regard to LSS services. Is the grant used to increase spending on LSS services? If so, is the increase greater than a similar sized increase from other income, contrary to theory? In addition, is the intergovernmental grant associated with information to the municipalities? Here, it is hypothesized that the interaction among municipalities arises from mimicking and/or cooperation among the municipalities. The grant is based upon a nationally determined standardized cost, and since this information is transparent in the grant, these standardized costs could be used by the municipalities that seek information (at the expenditure/service level), rather than mimicking each other. In order to study the effect of this grant, two separate time periods are used. The first time period, 2001-2003, corresponds to the time before the introduction of the grant, and the second time period, 2004-2007, corresponds to the time period after the introduction of the grant. To support the hypothesis that, via the information on standardized costs, the intergovernmental grant decreases the need for information mimicking, the level of interaction among municipalities should decrease in the second time period.⁶

The contribution of this paper is twofold. First, it adds to the public expenditure literature by analyzing the behavior of municipalities with regard to a new intergovernmental grant. The grant is directed toward an area that has experienced high increases in expenditure due to an earlier governmental reform of this particular service area. Second, it adds to the spatial interaction literature by showing that spatial interaction could be due to lack of information and the municipalities thus mimicking in order to avoid information costs. Although this study pertains to expenditures in Sweden, it may still be of interest to other countries, especially since the social support system continues to develop throughout the world. With the increasing social support sector, as well as the growing elderly population, many countries are currently experiencing an increasing expenditure burden.

The rest of the paper is organized as follows. Section 2 describes institutional characteristics of the LSS-act and section 3 discusses theory and the empirical model. Section 4 describes the data and section 5 presents the empirical findings, while concluding remarks can be found in section 6.

⁶ It cannot be ruled out that earlier cooperation among municipalities also affects the level of interaction. However, as will be described later in this paper, the cooperation agreements were only applicable for two of the nine LSS services studied here.

2. Institutional Characteristics

The Act Concerning Support and Service for Persons with Certain Functional Impairments (LSS) is an entitlement law to guarantee individuals with major and long-term functional disability equality in living conditions and full participation in the community.⁷ The responsibility for the LSS service provision largely resides with the municipalities that are responsible for nine of the ten LSS services; while the county council is responsible for the remaining service.⁸ There has been a significant increase in the expenditures for LSS services over the years and there are also large differences among municipalities.⁹ To a great extent, this variation in expenditures can be explained by the nature of the LSS service production. While LSS naturally depends on the specific needs of the individuals and the number of services required, it also depends on the concentration of individuals with a need for LSS services in the municipalities.

Table 1. Descriptive statistics, LSS characteristic

	2001	2002	2003	2004	2005	2006	2007	Increase 2001-2007
Individuals with LSS services*	47330	48863	51662	52994	54360	54824	56880	20.2%
Number of LSS Services granted*	82464	85462	90352	93083	95254	97712	99457	20.6%
Average expenditure per individual receiving LSS service, SEK**	424300	414646	420680	424737	428720	447371	447388	5.5%

*LSS services here only refer to the nine services performed by the municipalities.

**Prices adjusted to 2001 year prices.

⁷ The LSS-act contains provisions relating to measures for special support and special services for those with an intellectual disability, autism or a condition resembling autism; or for those with a significant and permanent intellectual impairment that occurred after brain damage in adulthood, or for those with other major and permanent physical or mental impairments not due to normal aging.

⁸ The ten services are: relief service in the home; children in residential homes; adults in residential homes; daily activity; personal contact; after school supervision; short stay away from home; companion service; personal assistance, and counseling and other personal support (which is the responsibility of the county councils).

⁹ The expenditure studied in this paper only pertains to the nine services performed by the municipalities since they are the only ones included in the LSS expenditure equalization system. One of the LSS services, *Personal Assistance*, is the responsibility of the municipalities for the first twenty hours (per week). If a person's needs call for more than twenty hours per week, this is a federal government (Social Service Administration) responsibility (as regulated in the LASS, *Assistance Benefit Act*).

The expenditures on LSS services constitute a substantial¹⁰ part of the spending on services in the municipalities; however, the resources are limited and many of the municipalities have not fulfilled their obligations according to the LSS-act (The National Board of Health and Welfare, NBHW, 2005). Table 1 shows the total number of individuals with LSS services in Sweden, as well as the total number of LSS services provided (each individual can get more than one LSS service). As shown by Table 1, there has been a steady increase in both the number of individuals and the expenditure per person during the period 2001-2007. For example, during 2001-2007, the number of individuals receiving LSS has increased by more than 20 percent. For a more thorough review of the LSS-act and its development, see Birkelöf (2008) and Lewin, Westin and Lewin (2008).

LSS Expenditure Equalization Grant

The financing of municipalities' LSS services has been subject to controversy ever since the LSS-act was implemented. For example, the Swedish Association of Local Authorities and Regions (SALAR)¹¹ believes that a federal financing of LSS services would be the best way of creating equal conditions for the municipalities as well as helping the municipalities operate a well functioning service. In 2000, the government appointed a group to investigate how to best equalize the expenditure for the LSS services among municipalities (SOU 2002:103). While the investigations took place, the government distributed a 350 million SEK grant to municipalities with extraordinarily high costs for their LSS services. Certain criteria had to be met to receive the grant; however, the grant itself was unconditional, meaning that there were no restrictions on how to spend it. The eligible municipalities, each year approximately 50 out of 290, received the grant for the years 2001-2003.¹² Then, in November 2003, the government decided to implement the new expenditure equalization system for LSS expenditure starting in 2004.¹³ The purpose of the new grant was to equalize the cost for LSS services among municipalities via an intra-municipality system.

¹⁰ For example, the expenditures for LSS are 24-28 percent of the total expenditures for the whole "Elderly and Disabled" sector (calculated by using expenditures available at www.WebOr.se; provided by the Swedish Association of Local Authorities and Regions).

¹¹ *In Swedish*: Sveriges Kommuner och Landsting (SKL).

¹² Each year, the municipalities had to meet the criteria (i.e. the expenditure had to be at a certain level). Most of the municipalities that received the grant one year also received it for the two other years, although there were some municipalities that received it only once or twice.

¹³ The decisions were based on the Legislative Proposal 2002/03:151 "Equalization of certain costs for special support to individuals with functional impairments" (*In Swedish*: *Uljämning av vissa kostnader för stöd och service till funktionshindrade*), and from a federal report "Equalization of costs for LSS" (*In Swedish*: *Uljämning av LSS-kostnader*), SOU 2002:103.

The *LSS expenditure equalization grant* (LSS-EQ grant) is separate from the ordinary *General grant* system for income and cost equalization (where, for example, the structural cost difference for the mandatory services of municipality and county councils is accounted for). However, similar to the general grant and the temporary LSS grant (2001-2003), the LSS-EQ is also an unconditional grant. To determine the size of a municipality's grant (or fee), the standardized cost for the municipality's LSS service is calculated and compared to the calculated standardized cost of the whole country. The calculation of the standardized costs is transparent and to some extent publicly available (at Statistic Sweden's website, www.scb.se). The standardized cost is calculated by multiplying the number of LSS services by a national average cost for each service. The cost is also adjusted by a *concentration index* and a *personnel cost index*. The purpose of the concentration index is to reduce/compensate for *economies of scale*. The purpose of the personnel cost index is to adjust for differences in the requirement of support (some LSS services require more personnel than others). Then, finally, the standardized cost is adjusted by *Net Price Index*. Unlike the temporary grant of 2001-2003, the size of the LSS-EQ grant is known to the municipalities in advance. For a more thorough review of how the LSS-EQ grant is calculated, see Appendix A.

Table 2. Standardized Cost* for municipalities and the nation

Year	Calculated Standardized Cost for Municipalities				Nation
	Mean	Std.Dev	Min	Max	Mean
2004	2334 (2544)	684 (817)	564 (357)	4841 (5775)	2293
2005	2582 (2659)	806 (839)	487 (501)	5858 (6262)	2546
2006	2713 (2841)	769 (877)	814 (607)	5137 (6132)	2681

*The values are shown in SEK per capita, adjusted to 2001 year prices.

Note: the values within parenthesis are the actual expenditures for LSS as reported by the municipalities.

The standardized cost, per capita, is computed for every municipality and for the whole nation. If a municipality's calculated standardized cost is higher than the national standardized cost, the municipality receives a grant. On the other hand, if a municipality's standardized cost is lower than the national standardized cost, the municipality must pay a fee.¹⁴ The grant (or fee) that a municipality is to receive (pay) is multiplied by the population of the municipality. For comparison, Table 2 shows the calculated standardized cost for the municipalities and the

¹⁴ The equalization system is regulated in two laws; the law of equalization-fees (SFS 2003:886) and the law of equalization-grants (SFS 2003:887).

country's standardized cost. The municipalities' actual expenditures for the LSS services are shown within parentheses. Between 2004 and 2008, certain transition rules consisting of a *maximum fee* and a *maximum grant* apply. During the transition period, the difference between the total grant and the total fee (from all municipalities) is financed by the federal government. Therefore, the equalization system will not be fully implemented until the year 2009.

Cooperation/agreements among municipalities

The municipalities are responsible for providing LSS services to their citizens. However, if a municipality is not able to provide the service itself, then (as regulated by §17 in the LSS-act) cooperation among municipalities is possible for two of the LSS services: *children in residential homes* and *adults in residential homes*. Municipalities can enter into agreements with one another where one municipality retains the cost responsibility for its residents living in special residential homes in another municipality, while the other municipality provides the services. The §17-agreements are used by, for example, small municipalities which do not have the ability to provide the service themselves. Municipalities entering into §17 agreements get a lower LSS expenditure per capita than they otherwise would (Birkelöf, 2008). However, due to the introduction of the LSS expenditure equalization grant in 2004, many municipalities have canceled the §17-agreements. The individuals living in the residential homes are now registered citizens of the municipalities where the residential homes are located, and their costs are instead included in the expenditure equalization system.

3. Theoretical Framework and Empirical Strategy

This section will start with a brief discussion on the theory of intergovernmental grants and the theoretical backgrounds of the different fiscal interaction models. This is followed by a discussion of how the *LSS expenditure equalization grant* and the (possible) fiscal interaction with regard to services for functionally impaired are linked.

3.1 Theoretical Background

Theory of Intergovernmental grants

In the theory of intergovernmental grants and the basic median voter model, the source of income is of no importance for the local government. Therefore, grants and local income have similar effects on local spending as long as the grants are given lump-sum (Bradford and Oates, 1971 a,b). Grants to the local government should be treated as any other income, i.e. they should be allocated according to the income elasticities of the median voter. However, contrary to

theory, the empirical literature on public expenditures usually finds that public spending is increased more by (lump-sum) grants than by local income. This is the so-called flypaper effect, since “money sticks where it hits”. For surveys of the literature on intergovernmental grants, see e.g. Hines and Thaler (1995) and Oates (1999).

There are two groups of intergovernmental grants: unconditional grants and conditional grants. Unconditional grants are free to be spent in any way, and the way in which they are usually designed implies that income from unconditional grants should have the same impact on local spending as the same size increase in local residents’ income. Conditional grants, on the other hand, are grants given for specific purposes; for example, the national government can use these to compensate the local government for carrying out a specific program. Their use is normally restricted; the money cannot be spent on other expenditure programs or be used to cut taxes. In addition to the two groups of grants, there is also a second dimension to the grants; they can either be matching or non-matching grants. Non-matching grants are often used to increase equality among jurisdictions, in terms of income/spending. Matching grants are designed as price subsidies; these grants have an income effect as well as a substitution effect. The grant decreases the relative price of the service/expenditure. Therefore, matching grants should have a flypaper effect since they affect the slope of the budget line, while non-matching grants only have an income effect and should not have a flypaper effect. However, studies of non-matching grants usually find a flypaper effect; contrary to theory. For an extensive review of intergovernmental transfers; see *Intergovernmental Fiscal Transfers: Principles and Practice* Boadway and Shah (eds.) (2007). Both the temporary LSS grant and the permanent LSS expenditure equalization grant studied in this paper are unconditional non-matching grants. Although designed for a specific purpose, there is no restriction on how municipalities spend them. Since there are no restrictions, the effect of the grants can be in the form of higher quality on the services for LSS (due to increased spending on LSS services); lower tax rates in the municipalities; or increased spending on other municipality services. Naturally, a mixture of these three outcomes is also possible.

Theory of Fiscal Interaction

There are several reasons to believe that local jurisdictions, such as municipalities, are interdependent when making tax policy, welfare level or expenditure decisions. One reason why municipalities are interdependent is that the benefits of public spending in one jurisdiction can spill over to neighboring jurisdictions. The interdependence among local governments could then cause a strategic interaction among jurisdictions. For example, infrastructure, environmental

protection, and parks in one jurisdiction can increase the welfare of residents in a neighboring jurisdiction. The neighboring jurisdiction can then “free-ride” and decrease its own spending on these services. In this sense, public expenditure from one jurisdiction enters the welfare function of other jurisdictions, *directly affecting* the jurisdiction. Local jurisdictions can also be *indirectly affected* by the fiscal policies of other jurisdictions (Brueckner, 2003). In order to attract a mobile tax base, a local jurisdiction can compete with lower tax rates as compared to nearby jurisdictions. This is due to the idea that individuals “vote with their feet” and move to a community that provides the desired level of a public good/tax rate.¹⁵ Interaction of this type can also be applied to welfare benefits. However, here the jurisdictions compete with low levels of welfare benefits in order *not* to attract welfare recipients (Brueckner 2000). This is the so-called race-to-the-bottom behavior.

The interdependence among local governments could also arise from yardstick competition (performance comparison). The interaction comes from the existence of an informational externality among neighboring jurisdictions due to imperfect information, and the cost of obtaining information (Besley and Case, 1995). Imperfectly informed voters can use the performance of other jurisdictions as a yardstick when evaluating their own politicians’ performance. In their study, Besley and Case conclude that politicians in office need to look at other local politicians and their decision making before making their own decisions (to avoid the risk of not being reelected). The yardstick model can also be applied to local governments themselves, i.e. local governments can also be incompletely informed. The yardstick model is commonly used for comparison of performance among local governments, so-called benchmarking. A local government can – when deciding on the best policy or expenditure level – use nearby jurisdictions as a yardstick/benchmark and mimic their policy or expenditure level in order to avoid an information cost associated with obtaining the information themselves. Yardstick competition could be used to study local governments’ decision making, for example, what service level to provide. For a survey of the empirical literature on strategic and fiscal interaction, see Brueckner (2003) and Revelli (2005).

LSS-EQ Grant and Fiscal Interaction

The hypothesis in this paper is that municipalities interact with one another when setting their LSS expenditure level. Since LSS services constitute a type of social service provisions, the

¹⁵ This is the so-called “Tiebout migration” where migration to other regions is motivated by fiscal gains. This argument was originally presented by Tiebout (1956).

expected source of fiscal interaction might be consistent with the theory of fiscal competition, in particular race-to-the-bottom. However, in this paper, it is argued that the source of interaction among nearby municipalities is due to lack of information on the municipalities' side. Therefore, the source of fiscal interaction in municipalities comes from the yardstick model, in particular mimicking. As previously mentioned, the LSS-act is an entitlement law, which gives eligible individuals the right to obtain services in accordance with the act. Since it is an entitlement law, the usual goals of the local government are not applicable in the same way here (quantitative goal, for example). There are at least three reasons why the yardstick model is the most likely source of interaction in the present case. First, the LSS service provision became the responsibility of the municipalities via a reform in 1994 and the entire new LSS-act was implemented at the same time. The LSS-act extended the number of people eligible to receive services, as well as the number of services offered (as compared to when the county council was responsible for providing the service). Only general guidelines for the provision of LSS services were provided for the municipalities and therefore, the uncertainty was great. Thus, in order to get information, while minimizing the information costs, the municipalities may mimic each other in their effort to provide the service. Second, only about 0.5 percent of the population receives services according to the LSS-act and, as a group, they are not very mobile. Furthermore, many of individuals who receive LSS services are dependent on having friends and family nearby, thus making them even less mobile. Third, one of the reasons for the LSS reform (the transfer of responsibility from the county level to the municipality level) was the aim of not having any differences in the provision due to geographical location. Since there are still differences among municipalities, this may point to a lack of information on what the service level should be rather than believing that some municipalities deliberately set their own LSS service/expenditure level below that of others.

With regard to the theory of intergovernmental grants, the LSS-EQ grant is known to the municipalities in advance and, as mentioned, the grant is an unconditional non-matching grant. The municipalities will therefore take the LSS-EQ grant into account when allocating their budget for the coming year. If municipalities increased their spending on LSS services by more than a similar increase in income, it would be consistent with the flypaper effect; i.e. intergovernmental grants increase local expenditures. The temporary grant, on the contrary, was associated with great insecurity, and it is likely that the municipalities would not expect or include it when budgeting their LSS service provision for the coming year. If that is true, then municipalities receiving the (unconditional) temporary grant would view this as any other income,

i.e. they would not increase (or decrease) their spending on LSS services as a result of an increase in the grant.

3.2 Empirical Model

Spatial interaction among governments arises when the spending decision in one jurisdiction does not only depend on its own characteristics but also on the level of spending by other jurisdictions. The dependence could either be directly, such as in the spillover model, or indirectly, as in the tax- or yardstick competition models. Spatial interaction can be modeled either in the *spatial lag model* or the *spatial error model*. In the spatial lag model, the interaction is specified by including a spatially lagged dependent variable; in the spatial error model, the spatial dependence is in the error term.¹⁶ When spatial dependence is due to strategic interaction, it is theoretically consistent with including a spatially lagged dependent variable in the model. Since the hypothesis in this paper is that the municipalities mimic/interact with nearby municipalities, spatial interaction will be modeled according to the lag model.¹⁷ In general, the spatial lag model can be specified as (in matrix form)

$$Y = \delta WY + X\beta + \varepsilon \quad (1)$$

where Y is a vector of spending, W is a weight matrix that describes the neighborhood relationship, X is a matrix of explanatory variables for the jurisdictions, ε is a vector of errors; and δ and vector β are parameters to be estimated, where δ is the spatial interaction parameter. One major issue in the estimation of the spatial lag model is the endogeneity of Y . Since Y appears on both sides of the equation, multidirectional dependence between the dependent variables exists, and errors for one observation are likely to be related to the errors in neighboring observations, i.e. spatial dependence (Anselin, 1988). The resulting correlation means that ordinary least squares (OLS) estimates of the parameters of the equation are biased and inconsistent. This requires the use of alternative methods for estimating the model; either by using instrument variables (IV) or using maximum likelihood (ML) estimator.

¹⁶ In the spatial error model, the dependence could be due to omitted variables or shocks that are spatially dependent themselves.

¹⁷ However, in the results section, a Lagrange Multiplier test is presented to discriminate between the two models. The LM tests points toward the spatial lag model being the correct way of specifying the spatial dependence in this case.

In this paper, panel data is used in order to study the effects of the LSS intergovernmental grants during different time periods. Panel data will generally be more informative, with more variation and less collinearity among variables (Elhorst, 2003). Panel data also allows for the specification of more complicated behavioral hypotheses including effects that cannot be addressed using pure cross-sectional or time-series data (Hsiao 1986, Baltagi 2001). The traditional fixed effects model has been extended to include a spatial lag dependence specification¹⁸ (Anselin and Hudak, 1992). Following Elhorst (2003), the spatial lag model extended to include fixed effects for space and time can be specified as:

$$Y_{it} = \delta W Y_{it} + X_{it} \beta + \alpha_i + \mu_{it} + \varepsilon_{it}, \quad (2)$$

where $i = 1, \dots, N$ is for spatial units (municipalities), and $t = 1, \dots, T$ is for time dimension. δ is the spatial interaction parameter to be estimated; α_i and μ_{it} are the variable intercept treated as fixed, representing the effect of the omitted variables that are unique for each municipality and year. The weight matrix, W , describes the relationship between the neighboring units, ω_{ij} ¹⁹. To estimate the model, the weight matrix W must be defined in advance. In the literature, it is common to define neighbors based on geographical contiguity or distance.²⁰ The hypothesis in this paper, with regard to spatial interaction, is that nearby municipalities mimic and interacts with one another in order to obtain information (on the expenditure level for LSS). To not only include the closest neighbor, the neighborhood weight matrix is based on a second-order binary contiguity matrix for Swedish municipalities.²¹ Both a municipality's neighbor and its neighbor's neighbor are considered to be neighbors in the second-order contiguity matrix. If the spatial interaction parameter is significantly different from zero, the hypothesis of no spatial interaction can be rejected and it can be interpreted as an indication of the neighboring municipalities interacting with each other.

¹⁸ The traditional fixed effects model has also been extended to include a spatial error specification; see Anselin and Hudak (1992).

¹⁹ ω_{ij} takes the value of one if municipalities i and j are neighbors, and zero otherwise. The diagonal in W (the municipality's own spending: ω_{ii}) is always zero. Furthermore, the weight-matrix is row standardized, so that each row sums to one.

²⁰ Other definitions are also possible, such as political or economic closeness.

²¹ Other definitions of neighbors are also possible. For example, "neighbors" could be based on the size of the municipalities or defined as commuting regions. In Birkelöf (2008), a set of different neighborhood matrixes was tested with regard to expenditures for LSS services, and the interaction among municipalities seems to be in geographically close municipalities.

To get consistent estimates for the β coefficients, the use of demeaned spatial regression may be appropriate (Anselin, Le Gallo, and Jayet 2008, Elhorst 2003).²² The demeaned equation is obtained by subtracting the average for each cross-sectional unit computed over the time dimension – which eliminates the individual fixed effects as well as the constant term (Anselin et al. 2008).²³ To address the endogeneity issue of Y , the model will be estimated using maximum likelihood method.²⁴

To study the hypothesis of interaction due to information spillover, the data in this study is divided into two data sets in order to study the effect of the *LSS expenditure equalization grant*, implemented in 2004. The hypothesis is that the spatial interaction parameter in the two time periods differs from one another due to the LSS-EQ grant. Both the temporary *LSS grant* and the permanent *LSS expenditure equalization grant* are included in this study; the temporary grant is included in the first time period, while the permanent grant is included in the second time period. The temporary grant is not expected to have any effect on the dependent variable *LSS expenditure* or affect the level of mimicking. That is, municipalities are still expected to mimic each other since this grant did not provide any information; i.e. the spatial interaction coefficient is expected to be positive. The LSS-EQ grant, on the other hand, is expected to affect both the dependent variable and the lag parameter. If the LSS-EQ grant provides the municipalities with information about the expenditure level, as is the hypothesis, the need to mimic its neighbors should decrease or diminish; therefore, the coefficient should not differ from zero. In the second period, municipalities are expected to use part of the grant to increase their expenditures for LSS services since the grant is known to the municipalities in advance.

²² In Elhorst models, the log-likelihood uses $\sigma^2 I$ as the error variance, not $\sigma^2 Q_{NT}$ (in Anselin et al. 2008, p 641).

²³ The dependent and explanatory variables for every spatial unit (municipality) are taken in deviations of their average over time. For example, the dependent variable is defined as (Elhorst, 2003):

$$Y_{it} - \bar{Y}_i \text{ where } \bar{Y}_i = \frac{1}{T} \sum_{t=1}^T Y_{it}$$

²⁴All computations are performed using the standard Matlab software packages (v.7.0) plus the freely available spatial panel routine toolbox downloaded from James P. LeSage's website at www.spatial-econometrics.com. Furthermore, the code for fixed effect spatial panel models is downloadable from the J.P Elhorst website at www.rug.nl/staff/j.p.elhorst/projects

4. Data

This study uses a seven year panel data set for Swedish municipalities, divided into two datasets; 2001-2003 and 2004-2007. There are 290 municipalities and 21 county councils in Sweden. All municipalities except one, Gotland, are included in the analysis. Gotland is excluded because the municipality and the county council coincide and therefore have a different role than the other municipalities. All the data in this study is collected from Statistics Sweden (SCB), except the LSS service variables that are collected from the National Board of Health and Welfare (NBHW). Descriptive statistics – including mean, minimum and maximum values – for all variables are presented in Table 3 and Table 4, for the years 2001-2003 and 2004-2007, respectively.

Table 3. Descriptive statistics 2001-2003

Variable	Mean	Std.Dev.	Min	Max
LSS expenditure, per capita, SEK	2380	809	432	6080
LSS temporary grant, per capita, SEK	53	156	0	1380
Tax base, per capita, SEK	113094	15782	87300	240300
General Grant, per capita, SEK	8060	4773	-15052	22699
Population (log)	4.26	0.39	3.41	5.88
Share of population age 75+, percent	9.74	2.25	3.21	15.45
Share of population age 7-16, percent	13.95	1.24	7.99	17.61
LSS service variable*:				
- Daily activity	44.11	11.87	0	88.00
- Personal Assistance	10.60	10.10	0	80.00
- Companion Service	17.16	12.24	0	61.33
- Personal Contact	30.37	13.23	0	73.68
- Short stay away from home	20.74	8.76	0	54.55
- After school supervision	6.93	5.28	0	35.00
- Adults in residential home	34.90	12.15	0	72.37
Individuals with LSS services per 10000 inhabitants (0-64)	57.69	17.40	10.14	150.31

*the share of the individuals in a municipality with (a specific) LSS service of all individuals receiving any LSS service in that municipality.

Dependent variable

The dependent variable in this study is *LSS expenditure per capita* (measured in SEK). All monetary variables in this study are adjusted to 2001 SEK using the Consumer Price Index (CPI) from Statistics Sweden. The dependent variable is chosen to study the effect of the grants on the LSS expenditure, but it is also chosen to reflect changes in quality of the LSS service (for example, increased expenditure may be a sign of higher spending on personnel).

Table 4. Descriptive statistics 2004-2007

Variable	Mean	Std.Dev.	Min	Max
LSS expenditure, per capita, SEK	2720	854	363	6769
LSS-EQ grant, per capita, SEK	71	675	-1150	3407
Tax base, per capita, SEK	128004	15652	101200	245400
General Grant, per capita, SEK	7112	4657	-14367	22267
Population (log)	4.26	0.40	3.41	5.90
Share of population age 75+, percent	9.84	2.23	3.43	16.17
Share of population age 7-16, percent	12.90	1.27	7.11	17.23
LSS service variable*:				
- Daily activity	45.27	11.12	0	85.19
- Personal Assistance	7.96	7.22	0	51.94
- Companion Service	17.81	11.94	0	67.54
- Personal Contact	32.48	13.13	0	78.95
- Short stay away from home	19.50	8.25	0	54.55
- After school supervision	8.35	5.11	0	33.33
- Adults in residential home	34.96	11.45	0	64.47
Individuals with LSS services per 10000 inhabitants (0-64)	62.89	17.05	15.41	160.46

*the share of the individuals in a municipality with (a specific) LSS service of all individuals receiving any LSS service in that municipality.

Explanatory variables

In addition to the explanatory variables for the two LSS grants, explanatory variables for the different LSS services are also included in the analysis. The *LSS expenditure per capita* consists of the expenditures from all nine LSS services. However, the nine services are not equally cost intensive. To control for this, there are two alternative ways of measuring the impact of the different services on the expenditures. One way is to construct an index of how cost intensive each service is. Another way is to use the number of individuals that is granted each service in the analysis. Since the expenditures for the services are not reported individually, it is not possible to construct an index. Instead, to account for the differences in cost-intensity, the second option is used.²⁵ Specifically, the LSS services variables are reported as “the number of individuals in a municipality with LSS service (daily activity for example), as a share of all individuals receiving any LSS service in that municipality”. For example, from Table 3, 44 percent of those who receive any LSS service receive the service *Daily activity*. This makes it the most common service. The service *Adults in residential homes* is the most expensive service and about 35 percent receive this. In a comparison between the two time periods, we can see that the percentage distribution

²⁵ Seven of the LSS services provided by the municipalities are included as explanatory variables in this study. The two services that are excluded, children living in residential homes and relief service in the home are only granted to a few individuals and thus, there is no variation in the data over the years.

of the share of individuals with each service is similar. However, the number of individuals receiving LSS services has increased from 57 to 63 (per 10000 inhabitants). Moreover, the average LSS expenditure per capita has increased over the two time periods, from 2380 to 2720 SEK.

Along with the two *LSS grant* variables, *General grant* is also included in the analysis. As mentioned in the theoretical discussion in section 3.1, in the basic median voter model of public finance, grant revenue is treated as any other income. However, contrary to theory, the empirical literature often finds that local public expenditures increase more with grants from the central government than with an equivalent increase in private income. To verify if the flypaper effect is evident here, the effect on LSS expenditure of an increase in *LSS-EQ grant* and the effect on LSS expenditure of an increase in *General grants* should be greater than the effect on LSS expenditure of revenue steaming from an increase in the *Tax base*.

Additional explanatory variables are used to control for municipal characteristics that may affect the composition of expenditures in different municipalities. The age structure is measured by the *share of the population aged 75 or older* and *the share of the population between the ages 7-16*. These two variables are used in order to account for municipalities with a high share of elderly people or individuals of school age. Since the LSS-EQ grant is unconditional, if a municipality has a high share of elderly people, for example, the municipality may choose to spend the grant on elderly care. Finally, the natural logarithm of the total population is also included as a variable to control for population size effects on LSS expenditure.

Merged data and missing observations

In 2003, the municipality of Uppsala was split into two municipalities, Uppsala and Knivsta. In this analysis, these two municipalities are added together for the years 2004-2007 (values weighted by population). The data for the LSS service variables is available as the number of individuals granted each LSS service. As mentioned in section 2, the service *Personal assistance* is regulated by both the LSS-act (up to twenty hours per week) and the LASS-act (for more than twenty hours per week). Prior to 2004, many municipalities over-reported the number of individuals with *Personal assistance*; they also included individuals with services granted by the LASS-act (which is the responsibility of the Social Service Administration). This was clarified in 2004, causing the reported number of individuals with *Personal assistance* to decrease to a more correct value (NBHW, 2005). Due to the sensitive nature of the LSS data, values for

municipalities that only have one, two, or three individuals with a particular LSS service are not available. Therefore, the value *two* is used in lieu of the non-available data. Nine municipalities²⁶ have missing values for the *LSS expenditure per capita* variable for the year 2001. Instead, the values for 2002 are used. The municipalities Härjedalen and Simrishamn have missing values for *LSS expenditure per capita* for the year 2002. Here, the mean values of 2001 and 2003 are used.

5. Empirical Findings

In this section, the results for the model discussed in section 3 are presented. As previously mentioned, the data is divided into two separate periods, 2001-2003 and 2004-2007, in order to study the effect of the temporary and permanent LSS grants. The determinants of LSS expenditure per capita are first estimated with Ordinary Least Square (OLS) and then with the Spatial Lag Model (SAR), including municipality-specific and time-specific fixed effects.²⁷ The results are presented in Table 5.

The spatial lag model is theoretically consistent with spatial interaction among municipalities studied in this paper; even so, we must test to decide which spatial model to use: the spatial error model or the spatial lag model. In the search for the right specification, “the classical approach” is used.²⁸ First, an OLS model is estimated. Then, a hypothesis of no spatial dependence is tested using a Lagrange Multiplier test (denoted LM test). Anselin et al. (1996) have developed an LM test to test for spatial dependence in the dependent variable or the error term for cross-sectional settings. Recently, Anselin et al. (2008) also specified the LM tests for spatial panels.²⁹ The LM test statistic is used to test the null hypothesis that the spatial dependence parameter is equal to zero. A rejection of the null hypothesis indicates that there is spatial dependence among neighboring regions, due to, for example, mimicking. If the hypothesis of no spatial dependence

²⁶ The nine municipalities are: Bollebygd, Finspång, Gislaved, Herrljunga, Svedala, Svenljunga, Torsby, Varberg, and Vindeln.

²⁷ In addition, three other specifications of the models were tested. One specification did not include any fixed effects; another specification included fixed effects for time only. However, both these specifications were outperformed by the specification presented in this paper. The third specification included fixed effects for municipalities only; since it is important to include time trends in this study, the model with fixed effects for both municipalities and time was chosen. The results from the above specifications can be obtained from the author upon request.

²⁸ For testing and discriminating between the spatial lag and the spatial error specification, see e.g. Anselin, Bera, Florax and Yoon (1996), Florax and Folmer (1992), and Florax, Folmer and Rey (2003).

²⁹ If significant spatial autocorrelation for both the spatial error and the spatial lag models occurs, a robust version of the LM test is used to select between the two models. This latter LM test is robust for non-normality of the error terms (Anselin et al., 1996). The robust version tests if the spatial dependence is in the error term, controlling for spatial lag dependence, and vice versa.

is rejected, then the LM tests are used to select between the lag and the error model. If the LM tests for both specifications are significant, the one with the highest test statistic is chosen (since the one with the higher value must be at least as good as the other).

Table 5. Estimation results for 2001-2003 and 2004-2007

Variable	2001-2003				2004-2007			
	I - OLS		II - SAR		III - OLS		IV - SAR	
	Est.	t-stat	Est.	t-stat*	Est.	t-stat	Est.	t-stat*
Spatial Lag Coefficient			0.13	1.68			0.08	1.11
LSS-EQ Grant, <i>SEK</i>					0.086	3.99	0.086	4.01
LSS temporary Grant, <i>SEK</i>	0.058	0.70	0.056	0.67				
General Grant, <i>SEK</i>	-0.029	-1.02	-0.027	-0.94	0.021	1.11	0.021	1.17
Tax base, <i>SEK</i>	-0.002	-0.30	-0.002	-0.28	-0.0002	-0.03	-0.0001	-0.08
Population (log)	312.86	0.19	420.06	0.25	-1479.8	-1.28	-1470.5	-1.28
Share population age 7-16	-48.08	-1.11	-47.52	-1.11	-39.76	-1.28	-41.04	-1.33
Share population age 75+	-57.83	-1.06	-64.34	-1.2	-144.35	-3.76	-144.58	-3.79
Individuals with LSS services per 10000 inhabitants	1.05	0.72	1.00	0.69	9.94	6.61	9.96	6.68
Daily activity	-1.56	-1.06	-1.5	-1.03	-2.35	-1.54	-2.35	-1.55
Personal Assistance	3.81	2.89	3.85	2.95	0.22	0.12	0.27	0.15
Companion Service	4.41	2.75	4.47	2.82	2.71	1.88	2.59	1.81
Personal Contact	-0.87	-0.62	-0.78	-0.56	-0.48	-0.39	-0.51	-0.42
Short stay away from home	3.31	2.01	3.27	2.01	-0.49	-0.29	-0.53	-0.31
After school supervision	3.00	1.24	2.95	1.23	2.16	0.94	2.25	0.99
Adults in residential home	2.78	1.46	2.74	1.45	4.2	2.25	4.24	2.29
Log-likelihood			-5611.12				-7491.51	
R-squared	0.0337				0.0737			
Number of Observations	864		864		1152		1152	
Spatial fixed effect	yes		yes		yes		yes	
Time period fixed effect	yes		yes		yes		yes	
Hausman test FE vs. RE	87.65	0.00			64.02	0.00		
LM (lag)			3.18	0.07			1.56	0.21
Robust LM (lag)			0.10	0.75			0.77	0.38
LM (error)			3.09	0.08			2.13	0.15
Robust LM (error)			0.01	0.91			1.33	0.25

*Note: for the spatial lag model, these are asymptotic t-statistics.

As can be seen in Table 5, for the first period, the LM test statistic is significant for both the spatial error and the spatial lag model. Since the LM test statistic is slightly higher for the spatial lag model, it indicates that the spatial lag model is the appropriate model to use here. This is also consistent with both theory and earlier empirical studies on spatial interaction among governments. For the second time period, however, the null hypothesis cannot be rejected, i.e. there is no evidence of spatial interaction among municipalities. Therefore, OLS is preferred over the spatial lag model for the years 2004-2007. Finally, a Hausman test is performed to

discriminate between a random effects model and a fixed effects model, and the test strongly indicates that the fixed effects model outperforms the random effects model. Therefore, fixed effects for a region (municipality) and time (year) are included in the regression.

Regression results

Interestingly, the results from the regressions, shown in Table 5, support the hypothesis that municipalities mimic each other before the introduction of the *LSS-EQ grant*. In the first time period, there is evidence of spatial interaction among neighboring municipalities, which could be due to mimicking. The spatial lag coefficient of 0.13 can be interpreted as for every 100 SEK increase in neighbors' spending of LSS, a municipality increases its own spending on LSS with 13 SEK. In the second time period, in contrast, there is no longer any evidence of spatial interaction among neighboring municipalities. This result supports the hypothesis that the transparency of the national set standardized cost level decreases the interaction (mimicking) among municipalities. In fact, since the "standardized cost" for each LSS service is provided with the LSS-EQ grant, this may be sufficient information for the municipalities to use in order to decide on the LSS service/expenditure level.

To study if there are differences in how the temporary LSS grant (2001-2003) and the permanent LSS expenditure equalization grant (2004-2007) affect *LSS expenditure per capita*, the data is divided into two different periods corresponding to each time period. The results imply that the two grants do not have the same effect. Specifically, during the first period, the temporary grant did not affect the LSS expenditure at all. This is just as expected, since the way in which the temporary grant was distributed can be viewed as a way of compensating the municipalities after the cost has occurred. However, the interpretation of this effect could be problematic since the LSS grant may be endogenous here (those who received the grant are those municipalities with high expenditures). The permanent grant distributed during the second period, on the other hand, has a positive effect on the LSS expenditures. For every 100 SEK received in LSS-EQ grant, municipalities use 9 SEK to increase the LSS expenditures. This effect of the grant is consistent with the hypothesis that the grant increases local public expenditures. The result is plausible since the grant is known to the municipalities; they know how much they will receive (pay) in grant (fee) for the current year and, therefore, they can take this into account when setting their LSS service level.

With regard to the municipality variables for the general grant and tax base, neither shows significant coefficients for either time period. An increase in either the general grant or the tax

base does not increase the spending on LSS services. This also means that there is no evidence of a flypaper effect with regard to the general grant and tax base variables. Nevertheless, since the LSS-EQ grant has a positive effect on LSS expenditure, while the tax base does not have any effect, it could be regarded as a flypaper effect (money sticks where it hits). However, since only nine percent of the LSS-EQ grant go toward the LSS service, the flypaper effect is not particularly strong here.³⁰ The flypaper effect found here is not strong compared to other studies either. Hines and Thaler (1995) list ten commonly cited studies that include the flypaper effect; all of which show some degree of flypaper effect: the flypaper effect in these studies ranges from 0.25 to 1.00 (as compared to the 0.09 found in this study).

When studying the other control variables, one major difference between the two time periods is that while the share of elderly people in a municipality does not have any effect on the LSS expenditure in the first period, it has a negative effect in the second period. This could be interpreted as the LSS expenditure increasing when the share of elderly decreases in a municipality; which could be due to a redistribution of the budget allocation within the elderly and disabled sector, of which both services to the elderly and the functionally impaired are part. The estimates for the LSS service *Personal assistance* also differ greatly between the two periods. The reason for this is most likely that the municipalities over-reported the number of individuals with personal assistance during the first period, while it is corrected from 2004 and onwards. Another coefficient that differs greatly between the two time periods is the LSS service *Adults in residential home*. As mentioned in the data description section, this is a service that is very cost intensive. While the coefficient is not significant in the first period, it is both greater and significant in the second period. The reason for this is most likely that the municipalities, from the year 2004, no longer use §17 agreements of cost responsibility between municipalities. The use of §17 agreements helped the municipalities achieve economies of scale; however, after the implementation of the LSS-EQ grant in 2004, the agreements are no longer in use, therefore both “receiving” and the “transmitting” municipalities get a higher LSS expenditure per capita.

³⁰ When estimating a model where grants are introduced as: $\alpha \cdot \text{LSS grant} + \beta \cdot (\text{LSS grant} + \text{General Grant})$, the α parameter is significant, while the β parameter is non-significant, indicating the presence of a flypaper effect.

6. Conclusion

In this paper, the effect of a new intergovernmental grant, introduced in 2004, with regard to the expenditure behavior of the municipalities, was studied. Two main questions were asked. First, did the grant increase the municipal expenditure for services to functionally impaired? Second, did the information associated with the grant (standardized cost) change the spatial interaction among neighboring municipalities? To answer these questions, the data was divided into two time periods: before and after the introduction of the LSS expenditure equalization grant. The results show that when municipalities received the grant in the second period, the expenditure increased for the LSS services by approximately nine percent. While the effect of the LSS grant on expenditures is positive, neither the general grant nor the tax base seems to have any effect on the expenditures. But given that the effect of the LSS grant is greater than the no-effect of the tax base, it can be interpreted as evidence of the flypaper effect, i.e. expenditures are increased by grants.

There is evidence of significant spatial interaction among the municipalities when setting their LSS expenditure level in the first time period. Although it is difficult to distinguish the cause of the spatial interaction, it is argued that in this case, the spatial interaction is due to mimicking. This is reasonable since the LSS service provision is relatively new to the municipalities, and the municipalities may not have full information on how to provide the service or what the level of expenditure should be. Thus, the information spillover from neighboring municipalities is used when setting their own expenditure level. With the introduction of the grant in 2004, the result shows that the spatial interaction is no longer evident, which supports the hypothesis that the standardized costs information provided by the grant may be viewed as a signal of what the actual expenditure level ought to be. This further supports the hypothesis that municipalities did mimic their neighbors to get information. Moreover, the lack of evidence for the spatial interaction after the implementation of the LSS-EQ grant could also to some extent be due to the decreased use of cooperation agreements. The source of spatial interactions among local governments can help provide important patterns and behaviors of government reforms and decentralization, such as the LSS-act.

Since the LSS service is regulated by an entitlement law, municipalities must grant LSS services to those eligible, even if it is expensive for the municipalities. Therefore, it must be noted that, on the margin, only 9 SEK per 100 SEK of the LSS expenditure equalization grant are used toward the LSS service. Since municipalities have a limited budget, increases in the expenditure – due to

an increase in the number of individuals granted LSS service or an extension of the LSS-act – may instead affect other areas of the municipal service, for example, education or elderly care, i.e. areas where it may be easier to save.

Finally, the model studied here measures the average effects on LSS expenditure of an increase in intergovernmental grants and the tax base. However, it is likely that every municipality is not affected in the same way; there is almost certainly heterogeneity among the municipalities. The standard deviation for the grant variables is large in most cases as well, indicating heterogeneity. While some municipalities would probably have been greatly affected by the grant, others would probably show a much smaller effect. Therefore, future studies on this issue may find it worthwhile to take this heterogeneity into account when studying the effect of the grants on the municipalities' LSS expenditures.

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Appendix A: Description of the two LSS Grants

LSS temporary grant 2001 – 2003

During 2001-2003, the government distributed an LSS grant to municipalities with extraordinarily high costs for their LSS service, based on the Legislative Proposal 1999/2000:115. The grant was functioning as “high cost protection” (*högekostnads skydd*) for the municipalities. The grant was temporary; the intention was to distribute the grant for two years only, 2001-2002, until the new LSS expenditure equalization grant system would be implemented. The temporary grant was later extended to also include 2003.

LSS expenditure equalization, 2004-present

The *LSS expenditure equalization* (LSS-EQ) is a national equalization system³¹, completely separate from the ordinary *General grant* system for income and cost equalization. The purpose of the LSS-EQ system is to equalize the cost for LSS among municipalities via an intra-municipality system. The decision to implement the LSS expenditure equalization system was based on the Legislative Proposal 2002/03:151. Below is a description of how the LSS equalization grant/fee is calculated.

Calculation of the LSS Equalization grant/fee for the year 2004^{32,33}

The equalization is based on three different sources: standardized cost for LSS services; differences in concentration of LSS activity; and differences in the need of care for individuals with LSS services. However, between 2004 and 2008, certain transition rules apply; therefore, the system will not be fully implemented until the year 2009. The transition rule consists of a *maximum fee amount*, as well as a *maximum grant amount*. For municipalities receiving the grant, the received grant amount will be reduced by 270, 70, 15 SEK for the years 2004, 2005 and 2006, respectively (per capita). Similarly, for municipalities paying the fee, the maximum fee cannot exceed 250, 550, 850, 1150 and 1450 SEK for the years 2004, 2005, 2006, 2007 and 2008, respectively (per capita). During the transition period, the federal government covers the difference between the grant and the fee.

³¹ The LSS-EQ system is based on the Legislative Proposal “Equalization of certain costs for special support to persons with functional impairments” (2002/03:151) and the federal report “Equalization of costs for LSS” (SOU 2002:103).

³² The information is based on Statistics Sweden’s description “*Economic equalization for local government and equalization of municipal costs for support and service for persons with certain functional impairments*” at www.scb.se

³³ The calculations for the years 2005, 2006 and 2007 are similar to this.

A. Calculation of Standardized-cost for LSS-services

The calculation for standardized cost is based on the number of LSS services granted according to the LSS-act 1993:387 and a national average cost per type of LSS service.³⁴ The information on the number of LSS services was provided by the National Board of Health and Welfare (NBHW), and it was measured on September 1, 2002. The national average cost per type of LSS services is based on the municipalities' annual accounts. The standardized cost is then calculated by multiplying the number of services with the national average cost.

B. Differences in cost due to some activity are concentrated to certain municipalities

The standardized-cost from A is multiplied with the so-called *concentration-index*. The concentration-index is based on how the average-cost per LSS service is affected by the share of individuals with impairments in a municipality. The purpose of this calculation is to reduce the economies of scale and compensate for "small scale economies". To minimize the risk of "strategic planning" by the municipalities, this index is not updated yearly, nor does it have any fixed schedule for when it will be updated. It is the government that decides when the indexes should be updated.

The number of individuals in a municipality that are entitled to LSS services is set in relation to the municipality's population. The share for the municipality is then divided by the calculated share of individuals with LSS services for the whole nation. Moreover, that result is then raised to the power of -0.16, which will then be the municipality's concentration-index. The value of the exponent explains the strength of the index. Municipalities with a higher share than the national average get to deduct an amount when calculating the standardized cost, and municipalities with a lower share than the national average must add an amount when calculating the standardized cost. The information about the number of individuals receiving LSS services was provided by the National Board of Health and Welfare and was measured on September 1, 2002.

C. Differences in cost due to differences in the need (level) of support and services

To measure the differences in cost that are due to differences in the level of support needed, a *personnel-cost index* is used. The index measures the "level of care" for the individuals that get services according to the LSS-act. The calculation is based on information from a number of municipalities' annual accounts for the year 2002. The index corresponds to 70 percent of the

³⁴ The compensation for personal assistance according to LASS is provided by the Social Security Agency.

difference between the municipality's own reported personnel cost and the personnel cost that is the basic standardized cost as described in point A above. The reason for only compensating 70 percent of the difference is to reduce the risk that the compensation will compensate for the differences in efficiency and political ambitions and not the intended level of need.