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## The impact of central places on spatial spending patterns: evidence from Flemish local government cultural expenditures

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**The Impact of 'Central Places' on Spatial Spending  
Patterns: Evidence from Flemish Local Government  
Cultural Expenditures**

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## ABSTRACT

### **The Impact of ‘Central Places’ on Spatial Spending Patterns: Evidence from Flemish Local Government Cultural Expenditures**

by Kristien Werck, Bruno Heyndels and Benny Geys \*

Governments often see it as their responsibility to support cultural life and at times spend a significant amount of resources in the pursuit of this goal. The present paper analyses whether and how municipalities influence each other in this decision to spend resources on the arts (using data on local government cultural spending in 304 Flemish municipalities in 2002). Following ‘central place theory’, the focal point of the analysis is the idea that – especially for cultural expenditures – large municipalities (and, specifically, ‘central places’) may affect their neighbours’ behaviour differently than small municipalities. The empirical analysis is supportive of this idea. Indeed, we show that Flemish municipalities’ cultural spending is generally positively affected by that in neighbouring municipalities. This pattern is, however, significantly more complex for municipalities neighbouring the 13 largest Flemish cities.

*Keywords: Central places, cultural policy, Flemish municipalities, local government expenditures, spatial interdependence, asymmetric response*

*JEL Classification: Z11, H40, H72*

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## ZUSAMMENFASSUNG

### **Der Einfluss 'Zentraler Orte' auf räumliche Ausgabenmuster: eine empirische Studie zu den kommunalen Ausgaben für Kultur in Flandern**

Regierungen sehen sich gemeinhin in der Verantwortung, für die Unterstützung des kulturellen Lebens zu sorgen und wenden hierfür erhebliche Ressourcen auf. Im vorliegenden Artikel wird analysiert, ob und wie sich Gemeinden gegenseitig bei der Entscheidung für Ressourcenaufwendungen im Bereich Kunst und Kultur beeinflussen. Diese Analyse beruht auf Daten über Ausgaben im Kulturbereich von 304 flämischen Gemeinden im Jahr 2002. Der „central place“-Theorie folgend liegt der Schwerpunkt der Analyse auf der Idee, dass gerade im kulturellen Bereich der Einfluss großer Gemeinden (und insbesondere von „zentralen Orten“) auf die Entscheidung der Nachbargemeinden ein anderer ist, als der Einfluss kleinerer Gemeinden. Die empirische Analyse stützt diesen Ansatz. In der Tat lässt sich zeigen, dass die Ausgaben im Kulturbereich flämischer Gemeinden positiv durch die Ausgaben ihrer Nachbargemeinden beeinflusst werden. Für die Nachbargemeinden der 13 größten flämischen Städte ist dieses Muster jedoch erheblich komplexer.

## 1. Introduction

A considerable amount of scholarly attention has recently been devoted to spatial patterns in (local) governments' fiscal policies. Recent reviews of this literature by Brueckner (2003) and Revelli (2005) indicate that fiscal decisions in neighbouring jurisdictions tend to play a prominent role in the decision to set one's own tax rate or level of public goods provision. This is also likely to be the case for cultural expenditures. The reason is that the benefits of cultural spending in one jurisdiction cannot easily be shielded from inhabitants of other jurisdictions. For example, lower ticket prices or higher quality due to a subsidization of the local theatre, museum or exhibitions hall will also benefit consumers from neighbouring jurisdictions (unless, of course, price discrimination is applied whereby only inhabitants can enjoy lower ticket prices). The resulting 'spillover' effects make that the optimal policy decision of one jurisdiction should take into account the policies chosen in neighbouring jurisdictions, leading to an observable spatial pattern in cultural expenditures (Kelejian and Robinson, 1993; Brueckner, 2003; Solé-Ollé, 2006).

Though, as mentioned, significant attention has been granted to such spatial interdependencies, Traub (2005) and Lundberg (2006) are – to the best of our knowledge – the only papers thus far assessing spatial patterns in cultural expenditures.<sup>1</sup> In extension of their work, we not only test for a spatial pattern in cultural spending across jurisdictions (i.e. Flemish municipalities), but also – and more importantly – examine whether asymmetries in this policy interdependence occur in function of the size of the various municipalities. Such asymmetric reactions to neighbours' spending depending on its urban status have not been studied before, yet might play an especially important role in our setting. Indeed, it has been argued that cultural goods are “pre-eminently central place functions” (Heilbrun, 1992, 205). The ensuing innate advantage of large municipalities in providing such goods can be expected

to affect the reaction of their neighbours to their level of cultural spending. Small municipalities – taking into account their (absolute) cost disadvantage relative to their large neighbours – might therefore be more liable to free-ride on large neighbour's cultural policies.

Our empirical analysis studies cultural expenditures across 304 Flemish municipalities in the year 2002. The findings indicate that cultural spending in one municipality tends to be positively related to spending in neighbouring municipalities. Interestingly, however, our analysis supports the proposition that there is an asymmetry in this spatial interaction. In fact, allowing for 'size' effects by giving the 13 largest Flemish cities a special status in the analysis indicates a more complex pattern in spatial interdependencies.

The remainder of the paper is structured as follows. Section 2 provides a theoretical framework of the spatial interdependence between jurisdictions, while Section 3 gives an overview of the institutional setting of local cultural policy in Flanders. Section 4 presents the empirical analysis and section 5 concludes.

## **2. Theoretical framework**

### **2.1. SPILLOVER EFFECTS AND FREE-RIDING**

Governments generally are no isolated actors. Decisions made by one government are likely to have effects on (and be affected by) the decisions of other governments.<sup>2</sup> This is especially probable in our setting since, firstly, the average municipality in Flanders is only 44 km<sup>2</sup> in size. Hence, the average distance between two municipalities can be estimated at approximately 7 km. Although distance is often argued to play a crucial role in deciding whether or not to visit a cultural event (e.g. Verhoeff, 1992; Bille Hansen, 1997; Boter et al., 2005; De Graaff et al., 2007), these limited distances (and therefore travel costs) imply that

the impediment to participate in cultural activities in neighbouring municipalities is small. Secondly, municipalities cannot easily exclude non-residents from the cultural services they provide. For example, subsidization of the local theatre, museum or exhibitions hall lowers prices for residents as well as non-residents (unless perfect price discrimination on the basis of residency is established, which is generally not the case) and both groups therefore benefit from the subsidy. Finally, there may well be a high degree of substitutability of cultural activities across municipalities. The organisation of a music event, arts fair or theatre performance in one municipality may not be all that different from those that are (or might be) organised in neighbouring municipalities. This implies that cultural provisions in different municipalities are likely to be close substitutes and people might well be indifferent between consuming the arts either 'at home' or 'abroad'. Interestingly, recent empirical evidence from Swedish municipalities indeed suggests that recreational and cultural activities across jurisdictions are strategic substitutes (Lundberg, 2006).

If travel costs are low, cultural goods are non-excludable public goods and residents obtain utility from cultural services provided in the own municipality as well as from those supplied in neighbouring municipalities (that is, if there are spillovers from local cultural service provisions), inhabitants of one municipality may jump the border and enjoy the services provided elsewhere. Such spillovers – and the cross-border consumption of the arts it implies – entails that each municipality's decision on cultural service provision will depend on how much its peers are investing in this policy field. In other words, there will be interdependence in local cultural policies (Brueckner, 2003).

In the absence of policy coordination across municipalities to internalise these spillover effects (or externalities), it can be expected that each local government will tend to free-ride on the provision of the others and under-provide cultural services. This is a common



prediction of theories concerning collection action failures (Olson, 1971). One reason for this behaviour in our specific setting is that the demand for cultural activities in a given area is finite. This limited number of potential consumers implies that only a certain level of supply is (economically) viable. Provision beyond this 'satiation point' is unwarranted (or, at least, inefficient from an economic point of view). Consequently, the provision of cultural activities by neighbouring jurisdictions reduces the economic rationale for a jurisdiction's spending on cultural activities (especially when these are substitutes and people are indifferent as to where to consume these goods: 'at home' or 'abroad'). Another reason is that the provision of cultural goods requires funding. Levying taxation to provide these funds is likely to be disadvantageous in terms of popularity (or re-election odds) (see Geys and Vermeir, 2007, for a review). These (electoral) costs of taxation can be forgone by relying (or 'free-riding') on other jurisdictions' cultural spending to fulfil the cultural needs of one's citizenry. Under the (substitutability and indifference) conditions stated above, such free-riding behaviour implies that high levels of cultural expenditures in one jurisdiction may reduce such expenditures in its neighbours.

It is important to note that such strategic free-riding behaviour induces a negative slope of the reaction function (which represents a municipality's optimal response to the policy followed in neighbouring municipalities). This leads us to our first hypothesis:

H1: Cultural expenditures in one municipality deter cultural spending among its neighbours (represented by a negative slope of the reaction function).

## 2.2. THE ROLE OF CULTURE AS A 'CENTRAL PLACE' FUNCTION

This general characterisation of neighbourhood effects in cultural spending is not the end of the story. Often, cultural activities are economically viable only if a critical mass of consumers can be attained. Such thresholds are more easily reached in larger, or more densely populated municipalities, as these can more easily exploit economies of scale. In fact, consistent with central place theory, the number of performing arts organisations in metropolitan places in the US has been found to be a (linear) positive function of population size: “a few large cities have the lion’s share of cultural institutions” (Blau and Hall, 1986, 47). Cultural goods may thus be “pre-eminently central place functions”, giving large municipalities an innate advantage in providing such goods (Heilbrun, 1992, 205). The benefits from this exploitation of economies of scale are not restricted to the producers of cultural activities but might also benefit the local government. Indeed, one additional euro spent in larger municipalities – or, arguably more accurately, ‘central places’ – to supply cultural activities may be (much) more productive than one additional euro spent by a small municipality.

This advantage for central place governments can be expected to affect the reaction of its neighbours to its level of cultural spending. That is, the government of a municipality adjoining a central place takes into account its relative cost disadvantage. It realizes that the (electoral) benefits of reducing residents’ travel costs (or increasing the option value of the arts)<sup>3</sup> by providing cultural services in one’s hometown are unlikely to offset the (electoral) costs – in terms of additional taxation – of providing similar cultural services as a central place. As a consequence, it will be more liable to free-ride on its neighbour’s cultural policies. At one extreme, it can even happen that a local government located next to a central place no longer provides cultural services since residents can jump the border to consume

such services and, given its size, it is simply too costly to provide these services itself. The innate cost advantage of larger municipalities (and especially central places) in providing cultural goods therefore leads to the following hypothesis:

H2a: As the incentives to free-ride are larger for neighbours of central places, their reaction to cultural spending by these central places is more negative than the general reaction to small neighbours' cultural spending.

Still, if central places have a cost advantage over other municipalities in the provision of cultural services, this can also be expected to affect their own behaviour relative to what their neighbours are doing. In fact, they might simply have no incentive – or possibility – to free-ride on what their (smaller) neighbours are doing. This leads to the following hypothesis (which is complementary to H2a):

H2b: As the incentives to free-ride are smaller for central places, their reaction to cultural spending by their smaller neighbours is less negative than the general reaction to small neighbours' cultural spending.

Finally, given the innate advantage and larger provision of cultural goods in central places, the citizenry of municipalities neighbouring such central places might well focus its attention exclusively on the cultural provisions in the central place. The reason is that this is where they are most likely to turn to in order to fulfil their cultural desires. This allows the local government of municipalities neighbouring central places to similarly neglect these smaller neighbours' policy decisions. As a consequence, smaller municipalities surrounding a central place can be expected to pay less attention to the policy decisions of their other (smaller) neighbours.

H3: Neighbours of central places are less likely to take the decisions of their non central place neighbours into account than municipalities that do not adjoin a central place.

### 2.3. ACQUIRED TASTES, REFERENCE POINTS AND INTELLECTUAL TRENDS

Spillover effects and the resulting free-riding behaviour are not the only reason why municipal cultural policies might be interdependent. In fact, several arguments have been brought forward in the literature to expect a positive (rather than negative) relation between neighbours' fiscal policies. A first argument builds on the well-established idea that the arts are an *acquired taste* (Marshall, 1891) whereby current consumption leads to further future consumption (for empirical evidence, see Morrison and West, 1986; O'Hagan, 1996). One theoretical approach to model this argues that the acquisition of human capital attributes associated with the arts (such as experience and understanding) through its consumption reduces the shadow price of the arts, which instigates further demand (cfr. Becker and Murphy, 1988). Another line of argument assumes consumers are uncertain or ignorant about their utility function and learn their own preference structures through consumption experiences (i.e. "learning by consumption"; cfr. Pollak, 1970; Lévy-Garboua and Montmarquette, 1996; Seaman, 2005). Importantly, under such theories cross-border consumption of the arts leads taste acquisition – and increasing demand for cultural activities – not only in the municipality that originally spent resources on cultural policies, but also in municipalities that surround it.<sup>4</sup>

A second argument for positive spatial interdependence starts from the idea that people often resort to relative performance evaluations. Neighbouring governments' policies are used as a

reference point to judge the policies provided by their own government.<sup>5</sup> Importantly, such relative performance assessments generate so-called *transaction* (dis)utility to voters (Thaler, 1985; see also Ashworth and Heyndels, 2000). This is the additional utility that people experience – besides the *acquisition* utility from the policy itself – by assessing its merit (or lack thereof) relative to a reference point (in this case, neighbours’ policies). Applying the argument to our setting implies that the absence of cultural activities in one’s own municipality appears worse when neighbouring municipalities do provide cultural activities. Hence, higher spending on cultural activities in neighbouring municipalities may put pressure on the local government to increase spending for such activities. Besides the generation of transaction (dis)utility, relative performance assessment also provides politicians caring about re-election with an incentive to mimic policy decisions in neighbouring jurisdictions (e.g. Salmon, 1987; Case et al., 1993; Besley and Case, 1995). The reason is that voters use neighbouring jurisdictions’ policy outcomes to assess the quality of their incumbents (and re-elect or replace them accordingly), thereby bringing politicians into a form of “yardstick competition” (cfr. Shleifer, 1985). Mimicking behaviour is a (rational) response to such yardstick competition and entails that higher cultural spending in one municipality leads to higher spending in neighbouring municipalities.

A third and final alternative explanation for a positive spatial pattern in cultural expenditures may be that “individuals in the same group tend to behave similarly because they have similar individual characteristics” (Manski, 1993, 533). That is, neighbours’ spending patterns coincide simply because their populations (or politicians) are similar, leading them to follow similar policies. One can then speak of a common (intellectual) trend rather than effective spatial interaction (Redoano, 2007).

H4: Cultural expenditures in one municipality induces cultural spending among its neighbours (represented by a positive slope of the reaction function).

Before turning to the empirical assessment of these hypotheses, it is crucial to point out that the arguments raised above build on the idea that politicians ‘for some reason’ do what proponents of cultural spending desire. One possible reason might be that politicians are mostly highly educated and – given that the audience of cultural activities is of “significantly higher educational, occupational and income status” (Throsby, 1994, 8) – may therefore be inclined towards cultural service provision anyway. However, the preferences of politicians need not be in line with those of the users of cultural services for our arguments to hold. Another means of achieving the same outcome is to presume that, though arts consumers are generally only a small subset of the population (see e.g. Lévy-Garboua and Montmarquette, 1996), they might well constitute a special interest group (cfr. Mueller and Murrell, 1986) with an incentive to spread at least part of the costs of their cultural consumption over the entire population (e.g. Withers, 1979; Krebs and Pommerehne, 1995; Traub and Missonig, 2005). As they are likely to be faced with little organized opposition on this issue (Schulze and Rose, 1998), they can be expected to have the ability to shape cultural policies in their own favour. Finally, when cultural policies are perceived to have an option or bequest value, a significant willingness-to-pay for such services may also exist among the group not making direct use of them (cfr. Frey, 2005).<sup>6</sup> Even non-consumers may then pressure local governments into providing cultural services.

### 3. Data and institutional setting

Belgium is a federal country with a highly complex institutional structure. The country consists of three language ‘Communities’ (the Dutch-speaking Community, the French-speaking Community and the German-speaking Community) and three territorial ‘Regions’ (Flemish Region, Walloon Region and Brussels Capital Region). Cultural policy is a responsibility of the Communities. This implies that cultural policy in the Flemish (Walloon) Region is under the control of the Dutch-speaking (French-speaking) Community. In the Brussels Region, where Dutch *and* French are official languages, the Dutch- *and* French-speaking Communities exercise their powers for their respective language groups (Coffé, 2006). Cultural policies by the Communities build mainly on subsidization rather than direct provision through state-owned cultural institutions. In fact, subsidies from Community-level governments are an indispensable source of income for many cultural organisations in Belgium (a comparable reliance on public subsidies for example exists for German orchestras; see Schulze and Rose, 1998).

Even though cultural policy is a Community-level responsibility, the municipalities in Belgium – and especially in Flanders – are in fact the prime source of cultural expenditures in Belgium. Looking at the period between 1995 and 1999, Flemish municipalities account for 33 percent of total cultural expenditures in Belgium, the Dutch- and French-speaking Communities for 25 and 20 percent respectively and municipalities in the Brussels and Walloon Region for 10 and 4 percent respectively (Ministerie van de Vlaamse Gemeenschap 2002, 134). Given their status as ‘big spenders’ on cultural activities, and the absence of municipal-level data for the other Regions, our empirical analysis will concentrate on the Flemish municipalities.

Taking a closer look at cultural spending in the Flemish municipalities in 2002, they together spent €591.4 million. This consists of all expenditures booked in the municipal budget under code 789 (“youth, community development and arts”) and includes spending on youth care, museums, exhibitions, historic buildings, open-air recreation, visual arts, festivities, performing arts and so on. Including ‘non-art’ spending entails, however, a broad interpretation of ‘culture’. Fortunately, the data allow us to separate spending on arguably non-cultural elements (such as youth care and open-air recreation) from more arts-oriented spending (such as museums, exhibitions and performing arts). Expenditures representing culture in this stricter sense amounted to €214.3 million in 2002 and fall into five categories: “culture and recreation” (52.27%), “museums” (19.24%), “festivities and ceremonies” (12.79%), “playhouses and performing arts” (10.57%) and “historical monuments, visual arts and exhibitions, literature and specialised libraries” (5.14%). These expenditures are financed from the general municipal budget, which essentially pools resources from tax revenues, general purpose grants, user charges and so on. Hence, the opportunity cost of an extra euro cultural spending equals reduced resources for other service areas.

While all municipalities account for cultural expenditures under code 789, this does not necessarily imply they all book the exact same types of spending under this code (or its subdivisions). In fact, there may be some difference across municipalities in what they perceive as cultural spending, and therefore book under code 789. For example, certain expenditures may be deemed ‘culture and recreation’ in one municipality but ‘youth care’ in another. This introduces some degree of ‘measurement error’ into the dataset. Nonetheless, there are a number of elements indicating the reliability of the data employed here. First, the municipalities have to follow relatively strict rules and guidelines in their accounting concerning, for example, the representation of given types of spending in the accounts (such as depreciation of capital stock). Moreover, the supervising regional government at times



sends round circulars indicating how a particular type of spending or income should be booked. Also, following a municipal debt crisis in Belgium in the early 1980's, supervision of municipal accounts has increased strongly. These elements – guidelines, supervision and circulars – tend to increase conformity in accounting procedures across municipalities and thereby the consistency of the data employed here (which were obtained from the supervising regional government).

Where municipal cultural policy has traditionally been fragmented and autonomous, a Flemish Community decree to stimulate a more structured local-level cultural policy (i.e. “decreet houdende het stimuleren van een kwalitatief en integraal lokaal cultuurbeleid”) has become effective since 1 January 2002. Under the new decree, municipalities are encouraged – but not obliged – to draw up a general cultural policy plan and to appoint a local cultural policy co-ordinator. In return, they receive financial support to pay the cultural policy co-ordinator (i.e. €25,000 or €50,000 depending on the municipality's population) and to finance the implementation of the plan (i.e. an additional €1 per head of the population). Between 1 January 2002 and 22 October 2003 (the latest data available), 206 municipalities in the Flemish and Brussels Regions submitted a cultural policy plan (136 of which were approved) and 173 municipalities appointed a local cultural policy co-ordinator (Ministerie van de Vlaamse Gemeenschap, 2003, 164). The additional government support under this new decree in 2002 amounted to €14.4 million, which is a relatively small amount compared to the overall cultural expenditures of the municipalities.<sup>7</sup>

Still, given that the cost of submitting a cultural policy plan can be assumed equal across municipalities, this submission reflects the intention of the municipality to spend resources on cultural policies. Thus, observed spending levels (even if increased by support from higher level governments) are likely to accurately proxy the desired level of municipal cultural

spending. Moreover, notwithstanding this recent legislation, local politicians play a crucial role and enjoy considerable independence in determining local cultural policy. Ultimately, the decision to spend resources on culture at the municipal level remains the political responsibility of the College of Mayor and Aldermen (the executive body of the municipal government). Therefore, local politicians continue to have a predominant impact on local cultural spending decisions.

## 4. Empirical analysis

### 4.1. MODEL SPECIFICATION

Our analysis concentrates on cultural expenditures in 304 Flemish municipalities in the year 2002.<sup>8</sup> The dependent variable equals the per capita level of local government cultural spending in this budgetary year (as defined by the ‘strict’ definition introduced in the previous section).<sup>9</sup> To address the hypotheses raised in section 2, we estimate (in matrix notation and with subscript  $t$  for time):

$$EXP_t = \alpha + \varphi NEIGH_t + e_t \quad (1)$$

The precise definition of the neighbourhood variable ( $NEIGH_t$ ) depends on the hypothesis being tested. To test H1 (versus H4),  $NEIGH_t$  is defined as the (non-weighted) average level of per capita cultural spending in neighbouring municipalities. Specifically,  $NEIGH_t = W * EXP_t$ , where  $W$  is a (304x304) row-normalized spatial weights matrix indicating whether or not two municipalities are neighbours and where  $NEIGH_t$  and  $EXP_t$  are (304x1) vectors.<sup>10</sup>

Neighbours are thereby defined in a geographical sense as two municipalities that share a border. Thus the weights ( $\omega_{ij}$ ) in  $W$  can be written as:

$$\omega_{ij} = \frac{w_{ij}}{\sum_{j \neq i} w_{ij}} \quad (2)$$

where  $w_{ij} = 1$  if  $i$  and  $j$  are contiguous. The entries in each row of the matrix  $W$  are thus  $1/n$  (with  $n$  the number of neighbours of the municipality in row  $i$ ) when the municipality in row  $i$  shares a border with the municipality in column  $j$  and 0 otherwise. The simple border-sharing criterion employed here can be justified since distance plays a central role in deciding whether or not to visit a cultural event (Verhoeff, 1992; Bille Hansen, 1997; Boter et al., 2005; De Graaff et al., 2007).<sup>11</sup>

However, as argued in H2a, cultural spending by larger cities (or, more specifically, central places) may instigate more free-riding by their neighbours. We test this proposition in two ways. First, as a second specification of  $NEIGH_t$ , we introduce the population-weighted average level of per capita cultural spending in neighbouring municipalities. The elements in the spatial weights matrix  $W$  ( $\omega_{ij}$ ) are then redefined as:

$$\omega_{ij} = \frac{w_{ij} \cdot pop_j}{\sum_{j \neq i} (w_{ij} \cdot pop_j)} \quad (3)$$

where  $w_{ij} = 1$  if  $i$  and  $j$  are contiguous and  $pop_j$  equals the population in municipality  $j$ . As a larger weight is here attached to expenditures of large neighbours, support of H2a would imply smaller coefficients for the neighbourhood effects compared to the non-weighted results.<sup>12</sup> Secondly, we identify a number of municipalities that are generally regarded as

central places in Flanders and award these a ‘special’ status in the analysis.<sup>13</sup> That is, we essentially introduce two separate weights matrices ( $W_1$  and  $W_2$ ) in the model, thus also obtaining two neighbourhood variables for each municipality. The weights in the matrix  $W_1$  are given by:

$$\omega_{ij} = \frac{w_{ij} \cdot \text{pop}_j \cdot \text{CP}_j}{\sum_{j \neq i} (w_{ij} \cdot \text{pop}_j \cdot \text{CP}_j)} \quad (4)$$

where  $w_{ij}$  and  $\text{pop}_j$  are defined as before and  $\text{CP}_j = 1$  if municipality  $j$  is one of the 13 central places in Flanders. This results in a (population-weighted) average level of per capita cultural spending in those of a municipality’s neighbours that are central places. This variable (denoted “CP-neighbours spending”) thus measures the effect of central places’ cultural spending on their neighbours and has non-zero values only for neighbours of central places. The second weights matrix ( $W_2$ ) has weights as follows:

$$\omega_{ij} = \frac{w_{ij} \cdot \text{pop}_j \cdot \text{NCP}_j}{\sum_{j \neq i} (w_{ij} \cdot \text{pop}_j \cdot \text{NCP}_j)} \quad (5)$$

where  $\text{NCP}_j = 1$  if municipality  $j$  is *not* one of the 13 central places in Flanders. This leads to a (population-weighted) average level of cultural spending in those of a municipality’s neighbours that are *not* central places. This variable (denoted “NonCP-neighbours spending”) measures the effect of non-central places’ spending decisions on their neighbours. Support of H2a would imply a (significantly) larger coefficient estimate for the latter variable.<sup>14</sup>

Finally, some municipalities only have ‘small’ (i.e. non-central places) neighbours (in our sample, this is the case for 198 municipalities) while others’ neighbours include both small

municipalities and central places (this is the case for 106 municipalities). As H3 argues that a municipality may react differently to small neighbours' spending depending on whether or not it also borders a central place, we split our dataset in two subsamples: those neighbouring central places and those that do not. Support of H3 would imply that significant interaction effects only exist in the latter subsample. Since neighbours of central places might simply ignore their other (smaller) neighbours, no significant interaction may exist in the former subsample.<sup>15</sup>

While assessing the existence of neighbourhood effects in municipal cultural spending, we follow the literature in controlling for a number of socio-economic, financial and political characteristics of the municipalities (e.g. Withers, 1979; Schulze and Rose, 1998; Getzner, 2002). A variety of theoretical models support the inclusion of such variables: e.g. the median voter model (Black, 1948), the Leviathan model (Brennan and Buchanan, 1977), special interest group models (Mueller and Murrell, 1986) or general political economy models (Craig and Inman, 1986). The final estimation equation has the following form (in matrix notation and with subscript  $t$  for time):

$$EXP_t = \alpha + \varphi NEIGH_t + \lambda SOCIO_t + \theta FINANCE_t + \delta POL_t + e_t \quad (7)$$

SOCIO is a 304x7 matrix containing data from seven socio-economic control variables (summary statistics are provided in table A1 in appendix). The first socio-economic control is population size (in natural logarithms). Larger municipalities are likely to have a higher per capita demand for public expenditures in general (and cultural spending in particular; Schulze and Rose, 1998). Moreover, they may have a centre function for cultural public goods (Heilbrun, 1992). Both elements lead us to expect higher per capita spending on cultural policies in larger municipalities. Still, since provision of cultural goods is often characterised

by significant fixed costs, the existence of economies of scale could lead to an offsetting effect (as public cultural expenditures will then increase less than proportionally to the total population). Secondly, we include population density (inhabitants per km<sup>2</sup>) as a measure for the degree of urbanisation. Higher population density tends to decrease the average distance people must traverse to attend the arts within their municipality. As distance affects the attendance likelihood, demand for – and public expenditure on – cultural activities is likely to be larger in more densely populated areas (Withers, 1979).

We also account for the share of inhabitants under 19 years of age and the share of those above age 65. It has been argued that the elderly are likely to support the public provision of cultural activities as their opportunity costs to consume such activities are lower (Pommerehne, 1982; Schulze and Ursprung, 2000). Therefore, we expect a positive relation between the proportion of the population over age 65 and the level of public cultural expenditures. The effect of the proportion of inhabitants under 19 is a priori ambiguous. On the one hand, young people are generally less interested in (especially highbrow) cultural activities and the presence of a large share of (very) young inhabitants increases the opportunity costs of time for their parents – thereby decreasing overall support for high cultural expenditures. On the other hand, the arts have been argued to have a ‘bequest’ value (e.g. Bille Hansen, 1997; Schulze and Ursprung, 2000). This could lead to increased support for public intervention *and* public cultural expenditures when the share of young inhabitants is higher.

Real taxable per capita income (in €1000) and the level of education (as the share of inhabitants older than 20 with a college or university degree) are included to pick up demand side effects (Schulze and Rose, 1998). Audiences and willingness to pay for the arts are generally higher among the wealthy and highly educated (e.g. Pommerehne, 1982; Throsby,

1994; Bille Hansen, 1997; Schulze and Ursprung, 1998; Getzner, 2004). Moreover, as mentioned earlier, the wealthy and well-educated may constitute a special interest group striving for cultural provisions, which they consume, to be paid at least partly from the general municipal budget (Withers, 1979; Schulze and Rose, 1998). Somewhat related, we also include the rate of unemployment. Given the positive income elasticity of demand for cultural goods, we expect lower demand for (and lower public spending on) cultural activities when the share of unemployed increases. This may, however, be counteracted by the fact that the unemployed have more leisure time and lower opportunity costs of time.

These socio-economic variables are complemented with three variables to control for the financial situation of the municipality (FINANCE) (Krebs and Pommerehne, 1995). Firstly, we include the level of per capita financial support some municipalities receive under the new Flemish legislation concerning local cultural policy (see section 3). These subsidies can be expected to lead to higher cultural spending (cfr. Hofferbert and Urice, 1985).<sup>16</sup> Secondly, we include the level of general purpose grants (per capita, in €1000) received from higher level governments. It can be expected that local governments provide more public goods when these can be financed (at least partly) through grants as the perceived cost of spending then is lower (cfr. the literature on fiscal illusion and so-called flypaper effects: e.g. Bradford and Oates, 1971; Hines and Thaler, 1995; Heyndels, 2001). Finally, we introduce the lagged level of long-term local public debt (per capita, in €1000) to gauge the strain of past (investment) decisions on municipal finances (Schulze and Rose, 1998; Getzner, 2004). While loans allow a municipality to spread its investment costs over the (economic) lifetime of the investment, interest and amortization of existing debts must be paid out of the current budget. Hence, higher levels of historical debt are likely to translate into lower levels of public goods provided in the current period.

The model is completed by two political control variables (POLI) that tap into the characteristics of the local government in 2002 (and which was elected in 2000). Firstly, we examine whether the ideological persuasion of the local government affects the level of cultural spending. Left-wing parties are generally argued to be more in favour of government intervention, while right-wing parties tend to support the workings of the market (Hibbs, 1977; Tavares, 2004). Survey research from the U.S. likewise indicates that people with a self-described right-wing ideology are more opposed to public support for the arts than people with a left-wing ideology (Brooks, 2001). Left-wing governments may thus be more prone to subsidize the cultural sector (leading to higher cultural spending). However, this relation is not self-evident. When wealthier voters (who generally have a lower probability of voting for left-wing parties) have a more positive attitude towards cultural policy, this relation may even reverse (see, e.g., Schulze and Rose, 1998). We measure the ideological complexion of the local government as  $\sum_{i=1}^n (p_i \cdot \text{Complexion}_i)$ , where  $p_i$  is the seat share of party  $i$  in the College of Mayor and Aldermen and ‘Complexion’ refers to the ideological position of this party on a Left-Right scale (from 0 to 10).<sup>17</sup> The second political control variable accounts for the number of parties in the local government. It is included as recent evidence has shown that the size of local government coalitions (in terms of the number of parties) significantly affects government decision-making in Flemish municipalities (e.g. Ashworth et al., 2005, 2006; Geys, 2007; Goeminne et al., 2007).

Finally, two comments should be made. First, as noted in Section 3, public spending for cultural activities in Flanders is not restricted to the local governments, but also derives from higher-level governments. This might be important when, as argued by Withers (1979) and Jenkins and Austen-Smith (1987), these different donors take into account each others’ spending decisions. Moreover, to the extent that it is hard to observe whether a given provision of cultural goods is supported (mainly) through regional or municipal financial



support, the reaction of municipalities to what their neighbours do might also be affected by this spending. This might be especially problematic in our analysis if spending by the Flemish Community is concentrated in larger cities (e.g. because these have more cultural organisations). Unfortunately, data availability concerning the distribution of Community-level cultural spending over the Flemish municipalities is unavailable, such that we cannot fully account for these effects. Second, the right-hand side of equation (1) could be expanded by including a lagged dependent variable to control for slow adjustments in local cultural spending (i.e. “bureaucratic incrementalism”; Krebs and Pommerehne, 1995; Schulze and Rose, 1998). Still, inclusion of this variable adds several econometric complications (Greene, 1993) that are difficult to confront given the limited availability of historical data (see footnote 8). Hence, we decided to leave the lagged dependent variable out of the main estimations. However, preliminary findings including this variable show that a) municipal cultural budgets are indeed dominated by “bureaucratic incrementalism” and b) the main results with respect to the neighbourhood variables remain valid (results available upon request).

#### 4.2. RESULTS

The estimation results are provided in table 1. Column (1) presents the results from a linear OLS model that disregards any (potential) spatial pattern in the data. Testing for the presence of such a spatial pattern in the errors of the OLS estimation through Moran’s I, we find that the test statistic is statistically significant. The null hypothesis of no spatial effects can thus be rejected. Moreover, robust LM tests – developed by Anselin *et al.* (1996) – indicate that a spatial lag model is most appropriate for our data. The results of such spatial autoregressive regressions (SAR) estimations are reported in columns (2) through (6). In column (2), neighbourhood effects are included with neighbours defined as two municipalities that share a

border. In column (3), the neighbourhood criterion also takes into account the population size of a municipality's neighbours. Columns (4), (5) and (6) provide the results when awarding central places with a special status in the analysis (cfr. supra). In column (4), we assess whether there is a different reaction to the spending of central places compared to that of non-central places (cfr. H2a). In columns (5) and (6), we split the sample in municipalities with and without central place neighbours, to check whether the reaction to spending by small neighbours differs across both these groups (cfr H3).

Before we discuss the results, it is important to note that OLS estimation of equation (7) leads to biased and inconsistent estimates due to the endogeneity of neighbours' cultural spending. Hence, an instrumental variables (IV) approach is employed (which is somewhat easier to implement in our specific setting than its ML counterpart).<sup>18</sup> In line with the spatial econometrics literature, we use neighbours' socio-economic, financial and political covariates as instruments for neighbours' cultural spending (e.g. Heyndels and Vuchelen, 1998; Solé-Ollé, 2003). These instruments are jointly highly significant in the first stage regressions (not reported), suggesting there is no issue of weak instruments. This conclusion is reinforced by the fact that they pass the Anderson identification test. Also, the Hansen-J test cannot reject the null hypothesis of over-identification, indicating that the instruments are – as required to obtain valid estimation results – exogenous to the second-stage regression (see bottom row of table 1).<sup>19</sup>

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Table 1  
about here

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Starting the discussion of the results with the central (neighbourhood) variables, we see in column (2) that there is clear support for positive spatial interdependence in municipal cultural expenditures in Flanders. Cultural spending in neighbouring municipalities has a positive effect on cultural spending in any given municipality (supporting H4 rather than H1). These results therefore are supportive of the arguments that the arts are an ‘acquired taste’ (with consumption in surrounding municipalities instigating higher demand at home) and that local politicians tend to follow each other’s lead (as a rational response to inhabitants engaging in relative performance assessments). An alternative explanation of this spatial pattern, however, may be a common intellectual trend rather than effective spatial interaction (Manski, 1993; Redoano, 2007). Relying solely on the results in column (2) we are unable to distinguish which of both explanations drives this finding (a problem common in the spatial econometrics literature; Brueckner, 2003; Soetevent, 2006).<sup>20</sup>

Replacing the unweighted average level of neighbours’ spending by the population-weighted level of spending in neighbouring municipalities (in column (3)) leads to a fall in both the size and the statistical significance of the spatial parameters. This can be interpreted as support for the idea that the incentives for free-riding are larger when neighbours are larger – in line with H2a.<sup>21</sup> This is further underlined in column (4) where we distinguish the effect central places have on their neighbours from that of non-central places. The results show that the neighbourhood effect is only statistically significant for the latter. That is, spatial interdependence is especially important between municipalities that are not central places. A Wald test indicates that this difference between the effects of central and non-central places is statistically significant at the 10 percent level ( $\text{Chi}^2(1) = 3.33$ ).

Finally, in columns (5) and (6), we separate the sample between those municipalities bordering a central place (column (6)) and those that do not (column 5)). This allows a direct

test of proposition H3, which states that neighbours of central places may well disregard their smaller neighbours' behaviour. The results show a significant spatial pattern for municipalities not neighbouring a central place, while no significant interaction is found for neighbours of central places. Neighbours of central places thus appear to largely disregard their neighbours.<sup>22, 23</sup>

Turning to the control variables, population size is a highly significant determinant of municipal cultural spending. The larger the population, the higher cultural spending per capita (the inclusion of a quadratic term proved insignificant). Surprisingly, however, population density has a negative effect on municipal cultural spending. Still, though robust in sign, the effect fails to reach statistical significance. The share of inhabitants under 19 years of age and the share of those above age 65 affect cultural expenditures differently. Indeed, while the former appear to reduce spending (though the effect is statistically insignificant), the latter increases spending. This is in line with the idea that the elderly have a lower opportunity cost of time (Pommerehne, 1982; Schulze and Ursprung, 2000) and that young people may be less interested in (high-brow) cultural activities – or constrain their parents in going there. Also, our results are supportive of the idea that culture is more appealing to people of higher educational status (Throsby, 1994). Surprisingly, however, this does not hold for income (which appears to have no effect). Income and educational achievement are, however, highly correlated ( $r = 0.79$ ) and appear to generate a multicollinearity problem. When leaving out either of these variables, the sign of the other's coefficient estimate is correctly signed (i.e. positive) and reaches (or, in the case of income, approaches) significance at conventional levels.

Two of our three financial variables have a significant effect on local cultural spending. Unsurprisingly, general purpose grants and the subsidies some municipalities receive under

the new Flemish legislation for appointing a cultural policy coordinator and drawing up a general cultural policy plan significantly increase spending on cultural policies. This is in line with the finding of Hofferbert and Urice (1985, 325) that (federal-level) NEA grants in the US “seem to stimulate state arts spending”. Finally, we find that the two political variables included in the model add little to the explanatory power of the model. The coefficient estimates for both the ideological position of the government and the number of parties in the governing coalition fail to reach statistical significance (and, in the case of political fragmentation, are not robustly signed over the estimations). Similar effects for political variables were retrieved in an analysis of Austrian federal-level cultural spending over the period 1967-1998 by Getzner (2002).

## **5. Conclusions**

This paper addressed the question whether Flemish municipalities’ cultural spending is affected by the level of such spending in neighbouring municipalities. In other words, we assessed the prevalence of horizontal interdependencies in local government cultural policies in Flanders. The existence of such interdependencies in fiscal decisions has attracted a lot of scholarly attention in the recent literature (e.g. Brueckner, 2003; Revelli, 2005) and can be expected to play an important role in cultural spending as well. Indeed, as the benefits of cultural spending by any given municipality cannot be reserved exclusively for its own inhabitants, municipalities are likely to be affected by each other’s actions. To the extent that the arts are an ‘acquired taste’, consumption in neighbouring municipalities could result in higher demand at home. Also, local politicians might mimic each other’s decisions as a (rational) response to citizens engaging in relative performance evaluations (i.e. voters using neighbours’ policies as a yardstick to judge their own incumbent’s performance). However,

incentives for free-riding on neighbours' provision of cultural activities may create a negative interdependence between cultural expenditures across municipalities.

Importantly, the analysis is the first that attempts to assess the prevalence and importance of asymmetries in horizontal competition between municipalities depending on the urban status of a municipality's neighbours. We can exploit this differential behaviour of large and small municipalities' neighbours due to the inherent advantage that large municipalities have in providing cultural goods (cfr. Heilbrun, 1992). Although, to the best of our knowledge, such asymmetries have not been subject to empirical scrutiny before, the concentration of cultural talent in so-called 'central places' provides possibilities for economies of scale for both cultural producers and local governments. This can be expected to affect neighbouring jurisdictions' behaviour.

Our main findings are first of all that Flemish municipalities' cultural expenditures are positively affected by the level of cultural spending in their neighbours. This is supportive of the 'acquired taste' and yardstick competition arguments (though it might also indicate an underlying common intellectual trend). Secondly, when taking into account the distinction between 'central place' and 'small' municipalities, a more complex pattern arises from the data. Spatial interdependence is then shown to be especially important between municipalities that are not central places. Given that free-riding appears to be a stronger force for municipalities neighbouring central places, our findings cannot be solely driven by a common intellectual trend (as this would necessarily invoke positive spatial correlation). Finally, we find that small municipalities that border a central place tend to disregard what their smaller neighbours do. Or, at least, that the free-riding effect is compensating to a higher degree in these municipalities for the elements generating positive spatial interdependence. Hence, in line with the main proposition of the present paper, there are clear

asymmetries in the spatial pattern observed in cultural spending depending on the relative size of a municipality's neighbours. The spatial pattern across Flemish municipalities becomes significantly richer (and more complex) when taking into account the urban status of 'neighbours'.

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Table 1: Estimation results

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Neighbours' cultural spending	-	0.260 *** (2.79)	-	-	-	-
Population-weighted neighbours' cultural spending	-	-	0.072 ** (2.10)	-	-	-
CP-neighbours spending	-	-	-	0.029 (1.49)	-	-0.020 (-0.34)
NonCP-neighbours spending	-	-	-	0.366 ** (2.00)	0.432 ** (2.42)	-0.136 (-0.60)
Population size (log)	2.648 ** (2.21)	3.411 *** (2.65)	2.896 ** (2.43)	3.451 ** (2.51)	4.817 *** (2.82)	-2.715 (-1.01)
Population density (per km <sup>2</sup> )	-0.001 (-0.29)	-0.002 (-0.79)	-0.002 (-0.68)	-0.001 (-0.49)	-0.001 (-0.23)	-0.003 (-0.83)
% under 19 years	-0.624 (-1.13)	-0.545 (-0.98)	-0.578 (-1.07)	-0.635 (-1.10)	-0.764 (-1.02)	-0.673 (-0.74)
% over 65 years	0.910 * (1.90)	1.085 ** (2.23)	0.961 ** (2.05)	0.882 * (1.90)	0.842 (1.22)	0.634 (1.02)
Income (in €1000)	-0.651 (-0.66)	-0.440 (-0.46)	-0.690 (-0.73)	-0.124 (0.12)	-0.781 (-0.65)	2.432 (1.43)
Education level	0.307 (1.46)	0.333 * (1.70)	0.339 * (1.70)	0.311 (1.59)	0.450 * (1.84)	-0.160 (-0.46)
Unemployment rate	-0.162 (-0.11)	-0.190 (-0.12)	0.147 (0.10)	-0.156 (-0.10)	-0.474 (-0.20)	-0.734 (-0.29)
General purpose grants (in 1000€)	93.947 *** (4.83)	94.123 *** (5.14)	94.737 *** (5.04)	92.625 *** (5.09)	84.974 *** (4.49)	271.007 *** (4.38)
Cultural policy subsidies	3.997 *** (13.44)	3.900 *** (12.95)	3.966 *** (13.44)	3.979 *** (12.98)	4.126 *** (13.56)	3.194 *** (5.97)
Debt per capita (in €1000)	4.433 (1.56)	3.859 (1.47)	4.398 (1.59)	3.873 (1.54)	3.099 (0.84)	6.168 ** (2.41)
Number of parties in government	-0.069 (0.07)	0.167 (0.17)	-0.048 (-0.05)	0.479 (0.44)	0.556 (0.44)	-0.379 (-0.23)
Ideological complexion of Government	1.171 (1.10)	1.075 (1.02)	1.010 (0.97)	1.318 (1.23)	1.632 (1.15)	0.029 (0.02)
Intercept	-31.427 (-1.37)	-51.376 ** (-2.05)	-37.664 * (-1.65)	-54.729 * (-1.89)	-60.572 (-1.62)	-7.551 (-0.19)
N	304	304	304	304	198	106
Centered R <sup>2</sup>	64.22	64.87	64.71	63.37	67.02	62.59
Moran I	2.158 **					
Robust LM (error)	0.382					
Robust LM (lag)	2.343					
Anderson		244.93 ***	370.11 ***	120.24 ***	94.81 ***	36.48 ***
Hansen J test		15.549	16.625	16.217	12.605	13.197

Note: N = 304; robust z-statistics in brackets; \*\*\* significant at 1% level, \*\* at 5% and \* at 10%. Moran I tests for spatial correlation in the OLS error term while robust LM tests assess whether this patterns is most likely to derive from spatial error or lag dependence (correcting for the other). The Anderson canonical correlation test assesses the relevance of our instruments while Hansen J test examines over-identification of these instruments.

## Appendix A: Summary statistics

Table A1: Summary statistics (N=304)

Variable	Mean	Standard deviation	Minimum	Maximum
Cultural spending per capita	21.413	19.689	0.665	122.372
Neighbours' cultural spending	23.841	10.536	5.129	72.326
Population-weighted neighbours' cultural spending	33.565	20.911	6.072	111.986
CP-neighbours spending	23.671	36.608	0	121.138
NonCP-neighbours spending	22.879	9.944	5.351	85.510
Population size (log)	9.547	0.767	4.431	13.014
Population density (per km <sup>2</sup> )	512.513	441.297	52.079	3092.250
% under 19 years	23.044	1.846	17.934	28.822
% over 65 years	16.655	2.351	10.069	25.170
Income (in 1000€)	12.431	1.534	8.665	17.294
Education level	24.145	6.306	9.203	48.366
Unemployment rate	1.767	0.598	0.796	4.199
General purpose grants per capita (in 1000€)	0.114	0.063	0.075	0.821
Cultural policy subsidies per capita	1.736	2.786	0	18.225
Debt per capita (in 1000€)	1.089	0.483	0	3.546
Number of parties in government	1.868	0.728	1	4
Ideological complexion of Government	4.893	0.644	2.78	5.97

## ENDNOTES

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- <sup>1</sup> Withers (1979) and Jenkins and Austen-Smith (1987) study the relation between public cultural spending by different levels of government (arguing that, say, federal arts outlays in a given jurisdiction affect state and local expenditures in that same jurisdiction). We regard horizontal rather than vertical interdependencies between governments.
- <sup>2</sup> The most straightforward definition of a jurisdiction's neighbourhood is geographical (e.g. jurisdictions sharing a border). Still, one might also define the 'peer' group in terms of socio-economic or political similarities across jurisdictions (see e.g. Baicker, 2005; Van Parys and Verbeke, 2007).
- <sup>3</sup> The reason – taken from financial economics – is that a decrease in the 'strike price' of an option (e.g. through lower anticipated travel costs) to acquire a given underlying commodity (i.e. cultural activities) increases its value.
- <sup>4</sup> The influx of consumers from other jurisdictions may lead to (or enhance) potential congestion problems. As this generates costs for consumers (such as longer lines to buy tickets or reduced consumption experience due to noise; cfr. Traub and Missong, 2005), this is likely to strengthen the point made here: viz. pressure on governments in all concerned municipalities to increase cultural goods provision.
- <sup>5</sup> Empirical evidence on the electoral cost of taxation mostly confirms the idea that voters engage in such relative performance assessments (e.g. Besley and Case, 1995; Ågren, 2005; Vermeir and Heyndels, 2006; Bosch and Solé-Ollé, 2007; see, however, Revelli, 2002).
- <sup>6</sup> This 'option value' of the arts has received considerable attention in the literature. Individuals, so the argument goes, might be prepared to pay "for the option to consume art at some unspecified future time, fully realizing that they may never choose to exercise that option" (Shanahan and Hendon, 1979, 12; for empirical support see Throsby and Withers, 1986; Morrison and West, 1986; Bille Hansen, 1997).
- <sup>7</sup> Beside these specific grants and general-purpose grants, higher level governments may also provide matching grants when municipalities organize cultural activities. Unfortunately, we lack data on the prevalence and importance of such matching grants.
- <sup>8</sup> Data availability precludes inclusion of the remaining four municipalities. Note also that the 2002 data are the most recent figures available and that a change in the municipal accounting rules in 2000 prevents us from using comparable data for a longer period of time. This effectively constrains us to a cross-section analysis. One important drawback of this is that there is no temporal development, making it hard to speak of 'reactions' to other municipalities' behaviour in our findings. Essentially, we assess the 'equilibrium' outcome of the interdependent process at a given point in time.
- <sup>9</sup> The Flemish municipalities spent €132.6 million on local public libraries in 2002. The 'strict' definition, however, excludes this spending. The reason is that Flemish Regional legislation requires every municipality to have its own library. One could argue that this diverts cultural spending from the budget of the higher-level government to that of the Flemish municipalities and thus 'biases' local spending upwards. Nonetheless, re-estimating the model including library expenditures and subsidies (the latter amounted to €43 million in 2002) does not alter the inferences from the analysis (full results available upon request).
- <sup>10</sup> We assume that spending decisions are commonly observable and employ the contemporaneous level of cultural spending in the neighbouring jurisdictions. This assumption – also made in Buettner (2001) and Allers and Elhorst (2005) – is plausible since council meetings in Flanders are open to the public (except when personnel issues are discussed).
- <sup>11</sup> Given the small average distance between Flemish municipalities, we also experimented with a possible effect from second order neighbours (i.e. neighbours of neighbours; cfr. Heyndels and Vuchelen, 1998). As such effects were never detected, this is not retained in the final version of the paper. One might also use a

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distance-decaying weights matrix (with weights equal to the inverse of the distance between municipalities) to construct the neighbourhood variable. We return to the results of such a specification in footnote 21 (and are grateful to Stefan Van Parys for providing these data).

- <sup>12</sup> This redefinition is also important to appropriately account for ‘space’ in the spatial econometrics model. In fact, Mutl (2006) has shown that size adjusted weighting matrices are crucial in settings with widely heterogeneous jurisdictions.
- <sup>13</sup> This is the case for 13 Flemish cities: Aalst, Antwerpen, Brugge, Genk, Gent, Hasselt, Kortrijk, Leuven, Mechelen, Oostende, Roeselare, Sint-Niklaas and Turnhout (see Moesen, 2001). Note that these 13 cities are also the only ones designated as either ‘large’ or ‘regional’ cities through an extensive cluster-analysis incorporating dozens of socio-economic indicators in five categories (i.e. use of land and buildings, income levels, economic activity and structure of working population, demographic structure and externalities) by Dessoy (1998).
- <sup>14</sup> Since there are only 13 central places identified, assessing H2b is empirically difficult due to a lack of observations. Nonetheless, preliminary tests indicate that the reaction of central places to their (smaller) neighbours is always positive (though not necessarily statistically significant). This indicates absence of free-riding behaviour, as expected under H2b. Nonetheless, it also suggests some interaction between central places and their neighbours (due to yardstick competition, reference point effects or acquired taste effects, cfr. H4). Note that we also tested for the reaction of central places to the cultural spending in other central places (rather than their immediate geographical neighbours). Though coefficient estimations are positive, as might be expected, they fail to reach statistical significance. Given the insignificance of these results, we have not retained this extension in the main analysis.
- <sup>15</sup> One alternative means to test H3 is to interact NonCP-neighbours spending with a dummy variable equal to 1 for neighbours of central places (0 otherwise). This implies estimation of regression equation (1) with the following neighbourhood variables:  $\psi$  (CP-neighbours spending) +  $\zeta$  (NonCP-neighbours spending) +  $\xi$  (NonCP-neighbours spending)\*NoCP, where CP- and NonCP-neighbours spending are constructed as before,  $\xi$ ,  $\zeta$  and  $\psi$  are parameters to be estimated and NoCP (Neighbour of Central Place) is a dummy variable equal to 1 if the municipality shares a border with one of the 13 Flemish central places. H3 leads us to expect a negative effect on the interaction term ( $\xi$ ), indicating that the behaviour of small neighbours is less influential on the behaviour of municipalities adjoining a central place than on those not bordering a central place. While this approach effectively introduces multiple spatial regimes into the model (cfr. Bordignon *et al.*, 2003; Allers and Elhorst, 2005), this alternative modelling strategy (inappropriately) treats municipalities that do not share a border with a central place as if they have a central place neighbour with no cultural spending. This is not the case using the approach in the main text. The results under both approaches are, however, qualitatively similar (see footnote 22).
- <sup>16</sup> An anonymous referee pointed out that this variable may well be endogenous. However, the standard Hausman test of exogeneity does not support this and treating the variable as endogenous does not affect our results (available upon request).
- <sup>17</sup> The data concerning a party’s ideological position were obtained from Rihoux (2001) and are based on a self-placement survey asking presidents and spokesmen of the parties in the municipalities to locate their party on an ideological scale between 0 (Left) and 10 (Right). The figures range from 2.6 (Agalev) to 6.0 (VLD) (the extreme-right-wing party Vlaams Blok – now Vlaams Belang – was not represented in any local government and is therefore not in the dataset).



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- <sup>18</sup> Preliminary tests show, however, that the basic findings of the analyses shown in columns (1) through (3) are also retrieved using ML estimation (even when we control for spatial error dependence). In fact, the coefficient estimates (as well as statistical significance) are very similar under both procedures. The results in Columns (4) and (6) would necessitate giving some municipalities in the sample values from two spatial weights matrices (which we were, unfortunately, unable to adequately implement using Matlab).
- <sup>19</sup> In the analyses where central places are awarded a special status (reported in columns (4) through (6)), we expand the set of instruments with dummy variables indicating whether or not a given municipality borders one of more central places. This is necessary to increase the strength of the instruments in these estimations (though their exclusion does not affect the estimation results).
- <sup>20</sup> To ensure that we are actually measuring spatial interdependence, we re-estimated the model using a weights matrix where neighbours are defined according to the alphabetical order of municipalities' names (cfr. Case *et al.*, 1993; Brown and Rork, 2005; Geys, 2006). Every municipality is awarded one 'neighbour' preceding and following it in the alphabetical ordering. Since this alphabetical ranking has nothing to do with the competitive forces between municipalities, the use of such a weighing scheme should not lead to significant estimates of the spatial parameter. In line with this prediction, the estimations indicate the absence of spatial interactions using these alphabetical 'neighbours' (results available upon request).
- <sup>21</sup> Using a distance-decay weights matrix gives a relatively large weight to cultural expenditures of large cities in the neighbourhood variable of all municipalities (due to the sheer size of cultural spending by large cities). Free-riding behaviour on large city cultural spending (cfr. H2a) should then lead to more negative (or lower positive) values of the neighbourhood parameter estimate when using a distance-decay weights matrix. Effectively, we even observe a negative spatial interaction coefficient (available upon request). This indicates that using a distance-based weights matrix (which implicitly gives higher weights to cities), the free-riding effect dominates.
- <sup>22</sup> The alternative proposed in footnote 15 – i.e. inclusion of an interaction between NonCP-neighbours spending (i.e. the population-weighted average level of cultural spending in those of a municipality's neighbours that are *not* central places) and a dummy variable equal to 1 for neighbours of central places (0 otherwise) – indicates that the interaction term has the expected negative sign, but is statistically insignificant at conventional levels. Hence, being situated next to a central place leads to a weaker reaction to small neighbours' spending (though insignificantly so). Note also that including a dummy variable for neighbours of central places directly into the analysis – in order to check whether vicinity to a central place *an sich* affects policy decisions – gives insignificant results (such that this dummy is not retained in the final model; except in the instrument vector).
- <sup>23</sup> The Brussels Capital Region is geographically surrounded by Flanders. Flemish municipalities bordering Brussels may thus be affected by cultural spending decisions in the Brussels Capital Region. Unfortunately, lack of data on cultural spending in the Brussels municipalities prevents a direct test of this possibility. As an indirect test, we re-estimated the model excluding municipalities that neighbour the Brussels Capital Region. The findings are quantitatively similar to those presented in the main text (available upon request). Also, including a dummy variable to assess whether neighbours of Brussels act significantly different from the remaining Flemish municipalities indicates that this is not the case.