The Political Economy of Cultural Spending: Evidence from Italian Cities.

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We investigate the relationship between Italian municipalities' spending on culture in the 90s and 2000s and a number of political variables, such as a left/right dummy, an election year dummy and a term limit indicator, controlling, among others, for economic and socio-demographic characteristics of population, level of human capital and instruction, proxies of social capital, extent of private financing of cultural provision, touristic and artistic relevance. We use panel data regression analysis and find that, indeed, some determinants of public expenditure on culture are political. In particular, we identify an electoral cycle in which the incumbent spends less on culture around the election year. This result is robust to variations of the empirical model to account for both persistence and spatial interdependence in the cultural expenditure by municipalities.

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1. Introduction.

Since the end of the 70s, after Whithers' seminal work on the differences between Australian provinces in subsidies to the arts (Whithers, 1979), public choice issues have entered the world of Cultural Economics. Frey and Pommerehne (1990) is an excellent survey of these early contributions, marking the departure of the discipline from its early uniquely normative approach.

The Political Economy of the Arts is, however, far from being vastly developed. This is especially true considering the empirical literature.

International comparisons are difficult because of non-homogeneity of classification in national accounting and the fact that the different levels of government play different roles here and there.[1] This is the reason why empirical research on the subject using international data is simply non-existing.

Empirical evidence using a country's central or local governments' cultural spending is not so widespread, either, lack of reliable data being the main problem in many national contexts. In the last decade, however, studies investigating the determinants of public spending on culture in a number of countries have appeared, some of which include political and institutional variables.

We focus here on the cultural expenditure of Italian municipal governments, considering the 106 provincial administrative centres (Italy's biggest cities) in the period 1998-2005 as our sample.

Bodo (2006) highlights that about 90% of Italy's public cultural spending is done by two actors: central government and municipal governments, with the former traditionally spending more, but with municipalities rapidly catching up in the last years in the more restricted fields of performing arts, heritage and contemporary art. In fact, municipalities pay for cities' libraries; they often run their own museums and theatres; and many of them have been organising very popular cultural festivals in the last years. We focus on the political determinants of a mayor's cultural spending. In our opinion, Italy is particularly interesting in this respect. In fact, the national specialized press tends to give politics' influence on cultural policies for granted, but, to our knowledge, this issue has never been empirically investigated.

The high media exposure of, say, the opening of a grand art exhibition should suggest a politician to schedule it before an election. The left/right dimension should also be relevant, possibly with the Left being more spending-prone, as the Italian experience at the central government level shows (Bodo and Bodo, 2007). Finally, the presence of a term-limited mayor might have an effect on this type of spending, as well as, as highlighted by Besley and Case (1995), overall public spending.

[1] Eurostat has set up a working group involving a number of European countries in order to tackle the problem.

Using panel data regression analysis, we regress different measures of public cultural expenditure on the political characteristics of municipal governments, controlling for a number of relevant variables, such as economic and socio-demographic aspects, level of human capital and instruction, proxies of social capital, extent of private financing of cultural provision, touristic and artistic relevance.

Our findings highlight that, controlling for other potential drivers of cultural expenditure, some political determinants are indeed relevant for public cultural spending. Although the political orientation of mayors does not play any role, and the presence of a term-limited mayor is possibly relevant for cultural spending only when it affects overall spending, we find that a peculiar electoral cycle is present in Italian cities: mayors tend to spend less for culture just before an election. We interpret these results in light of the fact that voters in Italy may prefer other types of public expenditures over culture. These results are robust to variations of the empirical model to account for both persistence and spatial interdependence in the cultural expenditures of municipalities.

Our work is organised as follows. Section 2 is a survey of recent related empirical works. Section 3 illustrates the variables we consider, while section 4 discusses the data we use. Section 5 presents the model and the econometric techniques, while Section 6 shows our results and Section 7 discusses some robustness checks. Finally, section 8 concludes.

2. Political determinants of public spending on culture: a survey.

Generally speaking, the empirical contributions to the Political Economy of the Arts show evidence of a limited role of politics in cultural spending strategies. However, it may be argued that not all of them base their conclusions upon the analysis of large samples and the adoption of robust econometric techniques.

Schulze and Rose (1998) consider the subsidization of German classical orchestras by local governments in 1994. Their findings are rather surprising: income seems to affect subsidies, but negatively, and education plays no role. The authors also include local government debt in their specification, since they argue that higher debt means higher debt service, an outflow competing with support to music. Indeed, the effect of debt turns out to be significantly negative. The left-right dimension is captured by a political variable calculated as the proportion of right seats in the local council. However, the authors do not consider the value of this indicator in 1994, but its average in the previous 15 years, arguing that policy makers can only change the status quo at the margin, due

to the strength of the musical bureaucracy's lobby. This variable is found to have a significantly positive coefficient. The authors explain that since classical music appeals to a high-income audience, this is consistent with politicians catering for their voters' cultural tastes. However, it may be argued that the small number of observations, the use of simple OLS estimation and the unusual treatment of the dynamics (relegated in the construction of the political variable) make the authors' challenging conclusions not definite.

Getzner (2002) applies a time-series approach to the analysis of Austria's central government's cultural spending in the 1967-1998 time span. The author finds expenditure on the arts, income and the ratio between the price level of government consumption and GDP deflator to be cointegrated. The author estimates an error correction model (ECM) and finds that income and relative prices (the latter in line with Baumol's cost disease argument (Baumol and Bowen, 1966) have significantly positive coefficient estimates, with income's short-term dynamics also having a role. When political variables are included, namely, a left-right dummy, a coalition government dummy and an electoral cycle variable, they all turn out to be insignificant. However, it may be argued that the first two variables probably change too little in the period considered by the author for the estimates to be conclusive. Getzner (2004) extends the public choice approach to the analysis of Austrian federal provinces' cultural expenditure, finding that there is neither an electoral cycle nor a war of attrition effect when a coalition is in office. However, at the local level of government there is some evidence of a partisan cycle, with conservative parties more spending prone.

Though not exactly focused on political determinants, Lundberg (2006) is a relevant contribution to the literature of municipal cultural policies, as it makes clear how it is essential to account for possible strategic interactions between neighbouring cities. The author estimates a seemingly unrelated (SUR) model for spatial interaction using maximum likelihood methods, and finds a significantly negative estimated coefficient for cultural expenditure provided by neighbours. This suggests that cultural spending by contiguous municipalities are strategic substitutes, as residents, by simply travelling, can free-ride on contiguous cities' cultural services. The results are not sensitive to changes in the definitions of the spatial weight matrices used in the empirical estimation.

Lewis and Rushton (2007) consider US states fund allocations for the arts in years 1976-1999, nearly 1200 observations. They run a (state and time) fixed effects panel data analysis with (log of) state appropriations as dependent variable and a number of economic, fiscal, socio-demographic and politico-institutional explanatory variables. Education and unemployment are found to have no impact, while both per capita income and state revenues have significant coefficients with value

close to 1. Voters' leftism has a significantly positive impact, while government's one has not.[2] The presence of a divided government does not seem to play a role, either.

Nooman (2007) investigates the same type of spending on a wider time span (1969-2002) and with a dynamic specification, using Arellano-Bond GMM estimates. The author's findings are quite different with respect to the significance of the political variables. The list of explanatory variables is longer here, with last year's value for the dependent variable having the lion's share, but with revenues, debt, federal targeted transfers and stringency of budgetary rule also playing a role. Education is again found to have no impact, and a higher proportion of both young and old people on total population seem to cause smaller subsidies to the cultural sector. Private support for the arts appears to have no effect. As for the political determinants, evidence is found of an electoral cycle in which there is a slump in appropriations in the first year of a term. The left-right dimension is analyzed jointly with the divided government dimension, and a Republican governor is found to spend more than a Democratic one only if they both experience divided government.

Werck, Heyndels and Geys (2008) focus on spatial patterns as well as political determinants. They run OLS and IV regressions with 304 Flemish municipalities' per capita cultural spending in 2002 as dependent variable and different measures of neighbours' cultural expenditures as independent variables, using economic, fiscal, socio-demographic and also political variables as controls. Neighbouring cultural policies do seem to affect (enhance) a council's cultural spending decisions, and so do population size, education, proportion of population over 65, grants and subsidies from central government (but not income and unemployment). Politics does not seem to matter: neither the number of parties in office, nor their political orientation reach statistical significance, suggesting that, at the local level of government, Belgium is not characterised by wars of attrition and ideological polarization in the field of cultural spending.

3. Dependent and independent variables.

We take per capita public expenditure on culture as dependent variable. In particular, on left hand side there is either of the following:

1) per capita current spending on culture,
2) per capita current spending on libraries, museums and galleries
3) per capita current spending for other cultural services (theatres, festivals, etc.)

[2] The authors do not investigate the correlation, and possibly collinearity, between the two latter variables.

We also consider current cultural expenditure over total current spending.

We disregard capital cultural spending for a number of reasons. First, capital spending is usually decided upon over a long horizon, because restoration works or building up a museum take time. Second, the series of capital spending is likely to exhibit autocorrelation. These two features make it difficult to draw a direct connection between the level of capital cultural spending of a given year and that year's political context. Finally, but importantly, the quality of the available data on capital expenditure appears to be poor.

In our model, the possible determinants of cultural public spending are the following explanatory variables:

- *GDP*: per capita GDP
- *Unempl*: unemployment rate
- *BFexp*: per capita private expenditure on culture
- *Monument*: relevance of a city in terms of artistic and touristic attractiveness
- *Log Pop:* log of population
- *Oldpop*: proportion of over 65 on total population
- *Youngpop:* proportion of under 15 on total population
- *Failmandsch*: percentage of population who have failed to complete mandatory school
- *Cultsociety:* number of cultural clubs and societies in the city
- *Electyear:* dummy variable taking value 1 if the year is an election year
- *Termlimit*: dummy variable taking value 1 in all years of a mayor's last term
- *Leftright*: variable capturing the left-wing orientation of the ruling government, taking values 1 (left) 0.5 (centre) or 0 (right).

We take all variables expressed in euro at constant 2007 prices.

We also estimate a dynamic specification in which the regressors include the lagged value of the dependent variable, to account for persistence in the level of public expenditure on culture. Moreover, as the empirical literature suggests the presence of spillover effects in cultural spending (Lundberg, 2006; Werck, Heyndels and Geys, 2008) we also estimate a series of spatial

interdependence models,[3] where a new variable, *Neighbexp,* the average cultural spending by neighbouring municipalities, is added.[4]

Almost all local governments included in the sample are coalition governments, so that a 0-1 dummy capturing a government's fragmentation is not fit to assess veto-players' role. Data on the number of parties in the coalitions are available only for some years and some municipalities, thus making the construction of a variable controlling for the number of parties in power unfeasible. Moreover, we argue whether the construction of such a variable would really capture coalitions' degree of cohesion. In fact, Dalle Nogare (1997, 2000) highlights that the number of coalition members is a poor predictor of a coalition government's probability to spend more than average: indeed, large coalitions often perform fiscal stabilisations.

We expect *GDP* to be positively related to public cultural spending, because of Wagner's Law, and unemployment to have a negative impact, as it makes more likely that mayors rather use the budget for social policies purposes. *Log Pop* may exhibit a negative sign if there are significant fixed costs and economies of scale in the production of cultural services: although larger cities are likely to have higher per capita demand for public spending, public cultural expenditure can in fact increase less than proportionally to the total population.[5] We expect *Monument* and *Cultsociety* to have a positive impact, and the education index to have a negative one. *Oldpopul* and *Youngpopul* may have a positive sign, according to the relevant literature.[6] The political variables' expected sign is positive, but only if we assume that what the Political Economy empirical literature finds for the size of government should also hold for the single components of aggregate public spending.

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[3] We are grateful to one referee for suggesting this important extension of the empirical model.

[4] Besides stressing the importance of spatial interdependence in cultural spending by Flemish municipalities, Werck, Heydels and Geys (2008) highlight that when different levels of government spend on culture, the size of each level's expenditure may be the result of their strategic interaction. Also Lundberg (2006) adopts a similar approach in analysing Swedish data on local government cultural spending. Lack of data on how central government's spending is allocated geographically makes it impossible to test this hypothesis for Italy.

[5] Most the literature finds evidence of a positive effect of population on per capita municipal spending in culture: see, for instance, Schulze and Rose (1998) and Werck, Heyndels and Geys (2008).

[6] Elderly are likely to support the public cultural spending as they have a low opportunity cost to consume cultural activities (Schulze and Ursprung, 2000). On the other hand, despite youngsters may be less interested in some cultural activities, and children certainly increase the opportunity cost of time for their parents, the arts have often believed to have a "bequest" value (Bille Hansen, 1997; Schulze and Ursprung, 2000) that can lead to support higher public expenditure in culture.

4. The data.

Data on cultural spending of all 8,101 Italian municipalities are available from the Italian Home Office since 1998. 1999 is the time the Internal Stability Pact came into force. This Pact mirrors the European Stability and Growth Pact and imposes the monitoring of local accounts by central government. We consider the 1998-2005 time span.

We consider 106 Italian municipalities, namely the cities which are provincial administrative centres.[7] They have a population between about 20,000 and 2.5 millions, and, in the vast majority of cases, are historic cities with local museums and artistic sites.[8] The reasons why we focus on this subsample are two. First of all, administrative centres are, with virtually no exception, the most populated towns in their respective areas, so they represent Italy's "urban contexts".[9] Second, and more importantly, these municipalities are, politically speaking, different from the others. Election candidates for a mayor position in an administrative centre are almost always members of national parties, and they are selected in view of a possible political career at a higher level. This rarely happens in smaller and less visible municipalities, where national and very local parties compete and mayors often end their political career as such.

In the official "*Certificati consuntivi*" (final budget balances) made available by the Italian Home Office we consider the headings "*impegni*", as these certify expenses that have actually been decided in the year of interest. The items of interest are two: total current cultural spending and current spending on "Libraries, Museums and Galleries", the only subset of the former which is available. This subset proxies expenditure for heritage and cultural goods, while total cultural spending includes performing arts and other cultural events. In both cases, transfers (i.e. subsidies to other public and private cultural producers) are included.

Confirming Introini and De Benedetto (2007) these data show a great variance. Also the dynamics is interesting. Per capita total current spending on culture constantly grows up to 2003, after which

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[7] Their number has been slightly varying in the course of time with the institution of new provinces. We have considered the cities which were provincial administrative centres in 1998. Notice that there is a couple of cases where two distinct cities jointly share the provincial administrative centre (Massa-Carrara, and Pesaro-Urbino). In these cases we have included both cities in our sample. This is why our sample consists in 106 cities, while the Italian provinces in 1998 were only 104.

[8] More often than not, today's administrative centres identify with the capitals of the small states Italy was divided into before it became a unified country in 1861. This is the main reason why they are so rich in cultural heritage.

[9] This also means more reliable data, because the smaller the towns, the lower the quality of local governments' budget reports.

there is no clear trend.[10] Per capita current expenditure on libraries, museums and galleries shows a slightly positive trend.

As far as total current spending is concerned, we also construct a net total current cultural spending by subtracting from cultural expenses those inflows imputed to the headings "Libraries, museums and galleries" and "Theatres, cultural activities and services", from the same source. These inflows are mainly made up by tickets' sales, sponsorships and donations. Net cultural spending characteristics and trends do not substantially differ from those of the gross counterpart.

Political data on Italian municipalities from 1993 to 2006 have been collected by Fabio Padovano for IREF (*Institut de Recherche Economique et Fiscal*). They include electoral dates and results, with a classification of winning parties along the left-right dimension.

In 1993 Parliament passed a law (law no. 81/1993) which changed the rules for the election of mayors in Italy, introducing a majority system in which mayors are directly elected by citizens.[11] The new rules were first applied in June 1993. The tenure was four years, but it was changed into 5 after 2000. A new feature is also the presence of a two-term term limit. The Data Appendix explains in detail our use of the Padovano's data.

Political analysts claim the new law has induced a stronger political competition at a local level, introduced a tighter link between citizens' and mayors' political agenda, and enhanced the level of transparency and accountability for local politicians. In the eight years we consider the relative majority of cities (45) witnessed at least one change in the left-right dimension, a clear break with respect to the past and possibly the consequence of stronger political competition. The time distributions of the electoral, ideological and term limit dummies show that there is no particular concentration in any single year. In the case of the electoral dummy, this is due to the fact that local elections are staggered.

Following Nooman (2007), an important control variable we consider is private cultural spending. Unfortunately, there are no aggregate data at a local level concerning cultural and artistic activities sponsored by private firms. We have therefore considered only non-profit organisations.

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[10] Apparently, there was no widespread "*Millennium Jubilee effect*" on cultural spending at a municipal level. However, there was no big cut in spending after 2000 either, in contrast with what Bodo (2006) finds for central government expenditure on culture.

[11] For municipalities of more than 5,000 inhabitants, in case of no absolute majority of the votes, a ballot should take place.

Unlike in a number of other countries, private cultural institutions are relatively new to the Italian context, and they have boomed in the last 15 years. Most of them are foundations, but one should distinguish between the so-called "*fondazioni di origine bancaria"* (or *fondazioni bancarie*, banking foundations), and the rest. The former originate from a 1990 law by which government-owned banks were privatised.[12] The 1990 law transferred to banking foundations relevant shares of local, regional, and, in a few cases, national banks. Thus, these foundations are, by far, the richest and most active private subjects in financing projects in the areas of health and social assistance, artistic and cultural initiatives. Banking foundations are 88 in all (17 of them spend 80% of their aggregate expenditure), and are mainly concentrated in the northern and central part of the country (Di Lascio and Segre, 2007). They are organised in an association, ACRI, from which we got the disaggregated spending data. ACRI has not provided us with the data about the geographical localisation of each banking foundation's cultural expenditure. However, they are usually forced by their own bylaw to spend in the area where the bank operates. We therefore use banking foundations' cultural spending as a proxy for private cultural spending in the cities where they reside. The Data Appendix provides information on how we have dealt with the likely case of banking foundations operating in more than one city.

Another important control variable we introduce is a proxy for the local level of social capital. We decided to measure social capital in a specific dimension in close relationship with the objective of our interest. Thus, we introduced the number of active cultural clubs and societies, as officially reported in each province for each year, in order to capture, to some extent, not only the level of social activities and interaction, but also the possible lobbying pressure on local councils from cultural clubs.

We thought it was necessary to introduce also some measure of a city's cultural heritage, as this is a proxy for how important tourism and cultural tradition are for the local economy. Besides, it often indicates both a tradition in public patronage and a demand for costly restoration work. The only obvious reference in this respect is the so-called "*Carta del Rischio*". This is a project by ICR (Central Institute for Conservation, a branch of the Ministry of Culture) aimed at mapping all Italian municipalities according to the number of monuments, and at classifying them according to the conservation risks they run. We used the data coming from the first part of this research.

[12] They were privatised in a peculiar way. In fact, they were separated into two entities: the bank itself and a foundation, owning the shares of the former but not the power to run it and whose aim was to provide services generically beneficial to the community.

Monuments here means museums, historical palaces, churches, fountains and a range of other heritage pieces, regardless of their property, whether public or private (including the Catholic Church). These data show that, generally, the municipalities in our sample are actually the richest in monuments, which is indeed one of the reasons why we focus on them.

5. The empirical estimation.

We estimate both the *fixed effects* and the *random effects* panel data models. In particular, denote y_{it} the per capita public expenditure on culture by municipality i at time t, x'_{it} a set of characteristics of the city considered as explanatory variables, β a vector of parameters to be estimated, α_i the source of unobserved heterogeneity across cities, not necessarily uncorrelated with our set of regressors, and ε_{it} the idiosyncratic errors. Then, under the assumption that the linear model

$$y_{it} = x'_{it}\beta + \alpha_i + \varepsilon_{it} \qquad (1)$$

satisfies the hypotheses of strict exogeneity, conditional on unobserved heterogeneity, normality, conditional homoskedasticity and the usual rank conditions, we can estimate the model using the *fixed effect*, or within group *OLS* (*FE*) estimator, which applies a within-group transformation and estimates OLS applied to data in deviation from city means. The FE estimator exploits only the variability within the same city, and under the above assumptions is a consistent and efficient estimator of the parameters. The main advantage of using the FE estimator is that it does not impose any hypothesis about the correlation between the unobserved city heterogeneity α_i and the regressors x_{it}. The main drawback of the model is that, since it cancels out all the variables which do not vary over time, it clearly cannot estimate their effects.

We also estimate the panel model using the alternative *random effect* estimator (*RE*). The RE estimator is an OLS estimator applied to the model transformed through FGLS (Feasible Generalized Least Squares), and combines the information from the variation within the same city (exploited by the FE estimator) and from the variation between different cities (exploited by the *between group* estimator, an OLS applied to individual mean data). Under the assumptions of normality, conditional homoskedasticity, the usual rank conditions and the additional hypothesis that the unobserved heterogeneity α_i is not correlated with our set of regressors (strict exogeneity, unconditional on unobserved heterogeneity), the RE estimator is a consistent and efficient estimator

of the parameters. The main advantage of the RE estimator is that it allows to estimate the parameters of the time-invariant variables. The main limitation is clearly its assumption that no correlation exists between the unobserved city heterogeneity α_i and the regressors x_{it}.

When the unobserved city heterogeneity is correlated with the set of regressors, the fixed effects model is consistent, while the random effects is not. The choice of the estimation model thus depends on whether no correlation between the unobserved heterogeneity and the regressors are good assumptions for our case.[13] An argument in favour of the validity of the hypothesis of no correlation between the unobserved heterogeneity and the regressors can be found in the peculiar history of Italy. Since the 12th century Italian history has constantly witnessed a central role played by cities. Almost until the relatively recent unification of Italy, in 1861, each major city kept its own independent government and juridical system and developed local culture, traditions, social structure and even language. From this perspective, each major Italian city is likely to have evolved along a peculiar pattern and to have developed its own individual character, even within similar socio-economic conditions. There still remain undeniably great differences among Italian cities, even within the same region, and it is very difficult to explain such a wide latent heterogeneity in light of economic and socio-demographic indicators.
Ultimately the answer to such questions is an empirical one. In order to select which model is appropriate, we perform a Hausman test on the difference between the *RE* and the *FE* estimates. Statistically significant differences in the estimates point against the hypothesis of no correlation. Based on the *F* statistic obtained from the Hausman test, we can accept or reject the null hypothesis that the unobserved city heterogeneity is uncorrelated with the regressors, and therefore we can select either the *RE* or the *FE* as the preferred model.

We then extend the above linear panel data models in two directions. First, we explore whether the level of cultural spending by a municipality also depends on its own previous expenditure (i.e. persistence over time). Secondly, we check whether one of its drivers is the level of cultural expenditures by the neighbouring municipalities (i.e. spatial interdependence).

In order to detect persistence in the levels of cultural expenditures we estimate a dynamic specification of the linear panel data model of the type

$$y_{it} = \rho\, y_{it-1} + x'_{it}\beta + \alpha_i + \varepsilon_{it} \qquad (2)$$

[13] See Wooldridge (2002).

or, alternatively, $y_{it} = w_{it}\,\gamma + \alpha_i + \varepsilon_{it,}$, with $w_{it} = (y_{it-1}, x'_{it})$, where y_{it-1} is per capita public expenditure on culture by municipality i at time $t-1$. As strict exogeneity is violated, since unobserved effects are correlated with lagged dependent variables, standard panel data estimators are inconsistent. However, under the assumptions that the dynamic model satisfies the hypotheses of consistency, asymptotic normality, conditional homoskedasticity, absence of autocorrelation in the idiosyncratic errors and sequential exogeneity (by which once w_{it} and α_i are controlled for, w_{is}, with $s<t$, has no partial effect on y_{it}), we can estimate the model using the *GMM first difference* estimator proposed by Arellano and Bond (1991). Using a large set of lagged values of y_i and x_i as instruments of the first differences of the model, the *GMM* estimator exploits a number of moment conditions to estimate the unknown parameters by a Generalised Method of Moments procedure. Under the above assumptions, it is a consistent and - depending on the choice of the weights matrix - efficient estimator. The Arellano and Bond estimator is fit to deal with datasets with many cross-sectional observations and relatively few periods, which is our case.

The presence of permanent positions in the cultural department of a city council organisation is clearly an argument in favour of some attrition in the levels of municipal expenditure. On the other hand, such an argument is better fitting in contexts in which cultural expenditure take mostly the form of investments, such as building museums or libraries, or refurbishing monuments. However, as already discussed, we do not consider capital spending here.

We also estimate different versions of the spatial interdependence panel model. The general idea can be represented by the following empirical model:

$$y_{it} = x'_{it}\beta + \varphi \Sigma_{j \neq i}\, \omega_{ij} y_{jt} + \alpha_i + \varepsilon_{it} \qquad (3)$$

where y_{jt} is per capita public spending on culture by municipality j at time t, φ is a parameter for the neighbourhood effect to be estimated, and ω_{ij} is a spatial weight attached to each pair of municipalities i and j. We employ the contemporaneous level of per capita public spending on culture by neighbouring municipalities.[14]

Spatial weights take different forms according to the model's specifications. In the simplest version:

[14] Our choice is in line with a common assumption by the empirical literature on local expenditures and tax yardstick competition (see Buettner et al., 2001; Bordignon, Cerniglia and Revelli, 2003; Allers and Elhorst, 2005; Geys, 2006; Werck, Heyndels and Geys, 2008).

$$\omega_{ij} = w_{ij} / (\Sigma_{j \neq i} w_{ij}) \qquad (3a)$$

where $w_{ij} = 1$ if provincial administrative areas of municipalities i and j are contiguous, and $w_{ij} = 0$ otherwise.[15] In such a case the overall neighbourhood effect $\Sigma_{j \neq i} \omega_{ij} y_{j\underline{t}}$ in model (3) boils down to the average cultural public expenditure by all the municipalities whose provincial areas share a border with the province of municipality i. This simple border-sharing model is quite common in the literature (Baicker, 2005; Geys, 2006; Werck, Heyndels and Geys, 2008) and captures the idea that citizens living in a municipality may travel to the main neighbouring cities in order to attend a cultural event, but are unlikely to go further.[16]

In a second model, the weight attached to municipality j in the neighbourhood effect on per capita cultural spending of municipality i is computed as:

$$\omega_{ij} = w_{ij} Pop_j / (\Sigma_{j \neq i} w_{ij} Pop_j) \qquad (3b)$$

where, again, $w_{ij} = 1$ if provincial administrative areas of municipalities i and j are contiguous (and $w_{ij} = 0$ otherwise) and Pop_j is the population in municipality j. Also this population-weighted border-sharing model is common in the empirical literature (e.g. Baicker, 2005; Werck, Heyndels and Geys, 2008) as it captures the idea that larger cities' cultural spending can induce less public spending, and more "free riding", by contiguous municipalities.

In the last version of the spatial weight matrices, we account for the fact that cultural events organized by neighbouring municipalities belonging to the same region of city i may exert a stronger effect on public spending on culture by municipality i:

$$\omega_{ij} = d^{sr}_{ij} w_{ij} / (\Sigma_{j \neq i} d^{sr}_{ij} w_{ij}) \qquad (3c)$$

Here $w_{ij} = 1$ if provincial administrative areas of municipalities i and j are contiguous, $d^{sr}_{ij} = 1$ if municipalities i and j belong to the same region, and $w_{ij} = 0$ and $d^{sr}_{ij} = 0$ otherwise. In such a case the overall neighbourhood effect $\Sigma_{j \neq i} \omega_{ij} y_{j\underline{t}}$ in model (3) is the average cultural public expenditure by the municipalities whose provincial areas share a border with the province of municipality i and belong to the same region, and can be rewritten as $y_{it} = x'_{it} \beta + \phi \Sigma_{j \neq i} \omega_{ij} y^{sr}_{j\underline{t}} + \varepsilon_{it}$.

[15] We have constructed the spatial weight matrix starting from information on the provincial borders available online from Wikipedia, and double-checked by direct inspection using a geographical atlas of Italy dated 2000.

[16] The border sharing spatial weight matrix is a common starting point also in the literature on local tax yardstick competition: see for instance, Bordignon, Cerniglia and Revelli (2003), Charlot and Paty (2007), and Bosch and Solè-Ollè (2007).

In the case of Italy, there are several reasons that make it worthwhile to test whether the neighbourhood effect is stronger within regional boundaries. For instance, one can argue that citizens from one municipality are *more* likely to travel to other cities within the same region.[17] Another reason may simply lie in the higher likelihood of becoming aware of cultural events scheduled in cities within the same region. With the only exception of major national exhibitions, in fact, cultural events tend to be advertised on regional televisions, radios and newspapers. Finally, cities within the same region are more likely to share homogeneous tastes and preferences for cultural events.[18] Thus, mayors are likely to compare their spending decisions with the ones by contiguous peers that they perceive as more similar.

Anselin (1988a) proposed the so-called spatial lag model $y = \rho W y + X\beta + \varepsilon$ (with W being a NxN spatial weight matrix, ρ the spatial autoregressive - SAR - coefficient, and ε an independent identically distributed error term with variance σ^2), corresponding to the matrix representation of models (3a-c), and showed that the OLS estimator for this model is both biased and inconsistent.[19] A viable estimation method uses an instrumental variables (IV) approach and consists in finding a set of instruments that are strongly correlated with the original variables Wy and X but asymptotically uncorrelated with the error term. Such an IV approach typically employs a two-stage least squares (2SLS) method. A first stage estimation regresses the spatially lagged variables Wy on a fixed set of exogenous instruments, while the second stage estimates the original model with the endogenous spatial explanatory variables replaced by the predicted values obtained from the first stage regression. Most empirical literature on spatial interaction in public spending employs the IV (2SLS) approach (e.g. Solè-Ollè, 2006; Baicker, 2005; Geys, 2006; Werck, Heyndels and Geys, 2008; Dubois and Paty, 2010) and we have done the same.[20] This IV approach is easy to implement

[17] This may be due to the fact that transports are easier and quicker within than across regions, even when keeping distances as fixed, and disregarding "natural" borders across regions (such as rivers, lakes, or mountains): in Italy, in fact, local public transport is mostly planned at a regional level, and bus or train services may be less frequent or convenient between cities belonging to different regions.

[18] This may be due to a variety of historical, cultural, or political reasons, and is also reflected by the fact that political variability across cities (for instance, in terms of left-right orientation) tends to be much higher between different regions, than within the same region.

[19] The failure of the OLS is due to the "endogeneity" of the spatially lagged variables Wy, which are correlated with the error term: such a correlation occurs irrespectively of the properties of the error term

[20] We have estimated a spatial lag model starting from user-written routines publicly available for the statistical software *Stata* (Jeanty, 2010a-c) in order to create the above described spatial weight matrices, run the tests to detect spatial patterns and the appropriate form of spatial interdependence, and estimate the panel models with spatial interaction (3a-c) using an IV 2SLS approach.

using standard statistical packages and leads to consistent estimates, while its efficiency crucially depends on finding a proper set of exogenous instruments (Anselin, 1988a).

6. The empirical results.

The main findings of our analysis of Italian municipal spending on culture are summarised in Table 1, where the *FE*, *RE* and *GMM* estimation results are reported.[21]

(Insert Table 1 here)

In the first three columns the dependent variable is *per capita* gross current cultural expenditure; in the following three columns it is current cultural spending as a share of total municipal current spending.[22] As it can be seen, the different models and estimation strategies produce quite similar outcomes.[23]

Most economic and socio-demographic variables do not reach statistical significance. The idea underlying the introduction of the *Cultsociety* variable is that public provision of cultural services may be subject to the lobbying activity of cultural organisations. However, our econometric analysis does not seem to support this view, as the coefficient associated with *Cultsociety* is never significant. This may be due to the fact that Italian cities tend to privilege in-house production of cultural services instead of their externalisation. An alternative explanation is that our variable is quite a generic proxy for the number and strength of cities' cultural clubs. A similar problem may affect the per capita GDP and unemployment variables,[24] as these refer to the provinces, not to their

[21] As far as the fixed and random effects estimates are concerned, we have run several specifications adding time effects, but they never produce qualitatively different outcomes. GMM estimates are Arellano-Bond step 1 estimates obtained using the following instruments: all lags of the dependent variable, the political variables, all other variables lagged one period. Notice that model (5) does not pass the Sargan's test; however by adding a second lag of the dependent variable as regressor the test is passed while results are qualitatively similar.

[22] We thank one referee for suggesting to include this dependent variable in our regressions.

[23] For per capita cultural expenditure, the Hausman test on the differences between *RE* and *FE* estimates produces *p-values* equal to 0.121 for the specification in levels. Thus the Hausman test points in favour of the *RE* model. Similar results hold when net cultural spending and the expenditure on libraries, museums and galleries, are considered.

[24] Notice that the lack of significance of the GDP variable on the level of municipal cultural spending is not completely new to the literature. For instance, Lundberg (2006) found a negative effect of average income on cultural expenditure in Sweden, but observed that its significance varied between years, leading to believe that was difficult to draw any conclusion on its effect. Also Werck, Heyndels and Geys (2008) found a negative but not statistically significant effect of income level on public cultural spending by Flemish municipalities.

administrative centres.[25] Also population does not seem to play a role. This may be due to the fact that a relatively large number of Italian cities are famous touristic attractions, and their cultural services are therefore scaled to a much larger audience than the city's population.[26] This may also explain why also the proxy for a city's human capital is never significant. The coefficient of *Youngpop* is more often significant than the one associated with *Oldpop,* but it rarely reaches full significance.

Instead, the North-Centre dummy, capturing the North-South divide of the country, is highly significant and with the expected sign. The effect of the presence of cultural heritage captured by *Monument* is also significantly positive.[27] Arguably, this is partly the consequence of the fact that if, say, a museum is present, it has to be run, while where there is no museum at all, there is no corresponding expenditure. And yet this neglects the consideration that keeping a museum alive, as well as deciding not to open a new one, is a political decision, and this is true for all excludable monuments. Therefore our result suggests that, wherever artistic heritage is potentially a factor of development, local policy-makers seem eager to exploit it.

The significance of cultural expenditure by banking foundations is striking, and deserves a special notice. Most banking foundations mainly operate as grant-makers, and the object of their transfers are often public authorities and local councils. Therefore, there is the sum of two phenomena here:

a) when a transfer is meant to sponsor, say, an exhibition at a museum owned by the city council, it enters the municipal balance sheets as outflow as well as inflow;[28]
b) when the exhibition could take place only in force of the generous contribution by the banking foundation, it is likely that the latter organises the cultural event and also puts some additional money. The alternative scenario would be one in which municipal spending gets smaller when private institutions' transfers get greater.

In the last column of Table 1 model (3) is replicated, but we substitute gross current cultural expenditure with its net counterpart. Banking foundations' contributions to the cities' budgets is subtracted from the dependent variable here, and so the sign of the estimated coefficient of private

[25] There is no systematic collection of data on municipal GDP and unemployment in Italy. Notice also that GDP may influence cultural spending in two ways: by enhancing the demand for cultural services and by increasing the tax base on which local authorities can rely to finance their services. In Italy, however, transfers from central government still played the lion's share in municipal inflows in the period here considered.

[26] *Log Pop* is sometimes significant and negative when the number of hotels is included as explanatory variable; see par. 7.

[27] We cannot use *Monument* (and also *Failmandsch*) in the FE and GMM estimates because, for every city, they are constant over time.

[28] In the vast majority of cases, public museums and galleries are not separate accounting units in Italy.

spending may be read as a clearer indicator of either complementarity or substitutability. One can confidently say there is a positive impact of private cultural spending on the amount of resources coming from taxpayers that municipal councils use to finance cultural activities.[29]

Focusing now on the political determinants of cultural spending, there is one clear conclusion to be drawn from Table 1: the electoral timing *does* matter when it comes to determine cultural spending. The other two political dummies do not seem to play any role instead.

That the left-right dimension plays no role comes as a surprise, though empirical works focusing on Belgium finds similar results. It may be the consequence of the use of a discrete, almost dichotomous variable as a proxy for a continuous one: as highlighted in the literature, this introduces measurement errors which give rise to significant attenuation bias. A possible alternative explanation is that, as a number of Italian political analysts claim, the left-right divide is less clear-cut at a local level after the electoral reform. If, at the central government level, Bodo and Bodo (2007) claim that left- and right-wing parties produce different cultural policies (the Left being more spending prone), at the local level parties tend to compete less on ideological issues and more on the quality of their candidates as potentially efficient administrators.

As for the *Termlimit* variable, there is no clear indication by the literature about which sign its coefficient should show.[30] However, some Political Economy studies point out that, since elections have no disciplinary role for a "*lame duck*", the latter is more prone to deviate from the median voter's preferences (Besley and Case, 2003; Smart and Sturm, 2006). Here the estimated coefficient of the *termlimit* variable is sometimes marginally significant and negative, but it is never so when the dependent variable is cultural spending over total current spending. In fact, by checking the relationship between total municipal current spending and the political dummies, it turns out that *Termlimit* is the only significant (and negative) driver.

(Table 2 about here)

So results here seem to suggest that a term-limited mayor may spend less on culture, but he actually spends less on all items, possibly in a wish to leave a sound financial situation to its successor.

But the most striking result is the *negative* sign of the election year dummy. Notice also its strong significance and relatively high value in the first three columns: it implies a fall of about 10% in average cultural expenditure. This is in contrast to a vast empirical literature on the effect of

[29] Using net current cultural spending instead of gross cultural spending rarely makes any difference in our analysis.

[30] For an extensive survey of both political and economic literature on term limits, see Lopez (2003).

elections on government spending (Alesina, Cohen and Roubini, 1997) and has no equivalent in the literature focusing on cultural spending. Our result is quite robust: we have run a large number of reduced models, dropping insignificant variables one at a time, and the significantly negative coefficient of *Electyear* is confirmed by all of them. As shown in Table 2, total current spending per capita seems to be unaffected by the electoral timing; on the contrary, when we take cultural spending over total spending, the negative sign of the election year dummy is there again. This is evidence of the fact that elections determine a change in the *composition* of municipal spending in Italy: mayors tend to shift resources away from culture just before an election and use them for other purposes. But why should they? The only possible explanation is that by doing so, they believe their chances to be re-elected will be greater. This, in turn, is a clear sign that the Italian median voter does not evaluate culture very highly.

In Table 3 we consider the spending sub-categories "Libraries, museums and galleries" on one side, and "Theatres and other cultural activities and services" (derived as the difference between total cultural spending and the first sub-category) on the other.

(Insert Table 3 here)

As far as the non-political variables are concerned, little changes with respect to Table 1. In the dynamic model, expenditures on libraries, museums and galleries show a stronger dependence on its previous year's value, which is consistent with the fact that the cultural activities in the second spending category include events, such as festivals and street parades, which usually imply a smaller permanent staff. As for the political variables, election years play the lion's part, here too, but notice the difference in magnitude between libraries, museums and galleries spending and its complement, which appears to be much more affected, in negative terms, by elections.[31]

As the Centre-North variable appears to be significant in the estimates in Tables 1 and 3, we have divided our sample geographically in two parts (Centre-North and South) to see if the political

[31] This is consistent with the fact that, while cultural events such as festivals or parades can be postponed or cancelled in proximity of elections, libraries, museums and galleries imply expenditures that are more difficult to cut in electoral years. Also notice that GMM estimates show an unusually strong and significantly positive impact of *Leftright* in column 5; however, this result does not seem to be robust to the elimination of the non significant variables from the model.

variables may play a different role here and there. A concise summary of our results is in Table 4, where we omit showing the controls.[32]

(Insert table 4 here)

Indeed, there are some differences: the electoral cycle in cultural spending seems to be particularly significant in the South.[33]

We now consider the extension of the empirical model accounting for spatial interaction among neighbouring municipalities' cultural expenditures. Column 1 of Table 5, panel B reports, as a benchmark, the estimates of the RE panel model already presented in the third column of Table 1.[34]

(Table 5 about here)

A preliminary check consists in testing for the presence of spatial interdependence in the errors of the RE panel estimates. One way to conduct such a test is to look at the result of Moran's type I test for spatial patterns.[35] The Moran's test statistic is marginally significant ($p=0.089$), which suggests that the null hypothesis of no spatial effects can be rejected, although with low statistical power. This motivates explicit investigation of spatial interdependence in our data.

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[32] FE and GMM estimates on the subsamples confirm the results we show here and are available upon request.

[33] The marginal significance of the *Termlimit* variable in the Centre-North subsample is due to the relative concentration here of *true lame ducks*. Following the suggestion of a referee, we have in fact tracked all term-limited mayors in their later political careers, using information from the Home Office (http://elezionistorico.interno.it/). We have then been able to distinguish between term-limited mayors who then competed for other political positions, and those who actually ended their careers. These two types of politicians appear to behave quite differently: the former are not different from non term-limited mayors, the latter are more prone to cut expenditures, instead.

[34] As discussed in note 23, in fact, the Hausman test points in favour of the *RE* model in the specification in level. Moreover, the presence of the time-invariant variable *Monument* among the instruments for neighbouring cities' cultural spending requires to look at the RE panel model for immediate comparability.

[35] The Moran's I statistic in our case is $I = (N/S_0)\ (e'We/e'e)$, where e is the vector of the panel RE residuals, W is our spatial weight matrix as in model (3a) and $S_0 = \Sigma_i \Sigma_j\ w_{ij}$ is a normalizing factor that corresponds to the sum of the weights for the non-zero cross-products. The Moran statistic is based on a normal approximation, using a standardized z-value (reported in Table 5).

The next step is thus to choose an appropriate spatial interaction model. In principle, several alternative models can be estimated to capture spatial interdependence.[36] To identify which spatial interaction model is the most appropriate for the spatial pattern exhibited by our data, one should look at the Lagrange Multiplier (LM) test statistics developed by the literature (Burridge, 1980; Anselin, 1988b; Anselin, Bera, Florax and Yoon, 1996).[37] While the LM-LAG test rejects the null at a marginally significant level (*p=0.0919*), the LM-ERR fails to do so, indicating that the mixed regressive-SAR model is the most appropriate model for our data.

As discussed in Section 5, we thus estimate a spatial lag model where the per capita level of cultural expenditure by municipality *i* is explained not only by its own characteristics, but also by the average level of cultural expenditures by the cities that share a provincial border with it. In order to deal with the problem of endogeneity of neighbours' cultural spending, we adopt an IV (2SLS) approach where a set of variables are used as instruments of neighbouring municipalities' cultural expenditures. In particular, we consider, as instruments of cultural spending by city *j* at year *t*, its contemporaneous level of the variable *BFExp* and its time-invariant variable *Monument*.[38] In fact, all our previous panel regressions show that these two variables are consistently among the best predictors of municipal current per capita cultural spending (Tables 1, 3 and 4). This is also confirmed by the strong positive correlations, and by the results of the first stage regression in 2SLS: the coefficients of *BFExp* and *Monument* are highly statistically significant and positive, as expected, and the regression has good explanatory power (panel A, Table 5). Standard IV diagnostic tests show that the selected instruments are valid ones.[39] Moreover, the Hansen-J test for

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[36] The spatial lag model (i.e. mixed regressive-SAR model) $y = \rho W y + X\beta + \varepsilon$ is one of the most common specifications used in the literature. However, an alternative model is the so-called spatial error model (i.e. SAR error model) $y = X\beta + (I - \lambda W)^{-1} u$ (Anselin, 1988a).

[37] These LM tests have two advantages. First, in contrast to the tests based on the likelihood ratio or Wald approaches, they do not need the estimation of the more complex model with spatial interaction. This implies that *RE* panel model is the only estimation required to run such tests in our case. Secondly, running both the so-called LM-LAG and the LM-ERR tests allows to directly discriminate between the spatial lag and the spatial error models (Anselin 1988b). Both LM test statistics are against the null hypothesis that no spatial dependence exists, and have a $\chi^2(1)$ distribution.

[38] While there is little doubt that the *Monument* variable is exogenous, the empirical literature offers many examples where neighbours' economic or socio-demographic variables are used as instruments for the expenditure by contiguous cities (Baicker, 2005; Geys, 2006; Werck, Heyndels and Geys, 2008).

[39] The F-statistic for joint significance of these instruments in the first stage regression is 58.44, which is well above the critical values for one endogenous regressor and two instruments (i.e. one over-identifying restriction) indicated by the empirical literature on weak instruments (Stock and Yogo, 2005).

over-identifying restrictions fails to reject the null hypothesis that instruments are valid and exogenous to the second stage regression (bottom row in panel B, Table 5).[40]

We estimate three distinct versions of the spatial lag model, which differ only in the way the spatial weight matrices, and, ultimately, the neighbours' average cultural spending, are computed. In model (3a) we consider the average expenditure by all municipalities whose provinces are contiguous to city *i's* province; in model (3b) average expenditure is weighted by the population living in the contiguous cities; in model (3c) we only consider the average expenditure by the neighbouring municipalities within the same region of city *i*. Columns 2-4 of Table 5, panel B, report the results of the estimation of the (3a-c) variants of the mixed regressive-SAR model.[41]

In general, the estimates show a significant and positive effect of the average cultural expenditure of neighbouring municipalities. This seems to indicate that, in the case of Italy, cultural spending by contiguous cities exerts positive spillover effects.[42] Notice that the estimated effect is small in size but not negligible, accounting for approximately one third of the effect of private cultural spending on municipal cultural spending. Hence, neighbouring cities' cultural expenditures should be regarded as complements, rather than substitutes. This result is in line with what Werck, Heyndels and Geys (2008) found for Flemish municipalities, but it is in contrast with what Lundberg (2006) found for Sweden.[43] In particular, both the size of the estimated coefficient and the statistical significance of the spatial interaction term are higher in model (3c) than in models (3a-b). This seems to indicate that in Italy spillover effects in cultural spending by contiguous municipalities seem particularly remarkable across cities belonging to the same region.[44] The effect is smallest in

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[40] The Hansen-J test statistic is distributed as a $\chi^2(1)$ in our case since we have two instruments for each endogenous variable (i.e. one over-identifying restriction).

[41] Having experimented a number of variants of this baseline model (e.g. net expenditure, log-log, sub-sets of regressors, all available upon request) we can safely conclude that the results presented here are quantitatively and qualitatively robust to alternative specifications of the dependent variables and the co-variates.

[42] Notice that the estimated positive effect seems much stronger, and also gains statistical significance, if one only considers the sub-sample of the cities in North and Central Italy, while is not significant for the cities in South Italy.

[43] In principle both findings can be supported by motivated arguments. On the one hand, Werck, Heyndels and Geys (2008) suggest that the evidence of a positive spillover effect supports the ideas that *"arts are an 'acquired taste'"*, for which availability in surrounding cities may trigger higher demand at home; and that *"local politicians tend to follow each other's lead"*. On the other hand, Lundberg (2006) argues that cultural spending by contiguous municipalities are *"strategic substitutes"*: increases in cultural spending by neighbouring cities lead a municipality to reduce its own cultural expenditure as residents can "free ride" on contiguous cities. .

[44] This may suggest that local politicians are more likely to compare their cultural spending looking at what their peers do in contiguous city councils, and/or that citizens of one municipality are more likely to be aware of, or more keen to attend, cultural events which are occurring in contiguous cities within the same region.

magnitude in (3b) instead, suggesting that positive spillovers tend to be smaller in presence of larger neighbours, possibly because of stronger incentives for "*free riding*".[45]

Given the main objective of our analysis, it is perhaps of greater interest to look at the estimated coefficients of the other explanatory variables. The introduction of the spatial interdependence terms does not radically alter the qualitative results of our previous estimates. Both *Monument* and the dummy variable for *Centre-North* now show smaller size in the estimated coefficients, but remain highly significant. Private cultural expenditure shows a decline both in the level of statistical significance and in the estimated size of the coefficient, which suggests that not accounting for spatial dependence may lead to over-estimate the effects of some variables.

This is also the case for *Electyear*. Notice, however, that the negative sign of its coefficient is confirmed, and its significance is not marginal in model 3c. This result seems to confirm the existence of a peculiar electoral cycle in the cultural expenditures of Italian cities.

7. Robustness checks.

We have also estimated different model specifications, in order to test the robustness of our previous results to changes in the number and type of explanatory and control variables.[46]

First of all, we have tried to control also for the possibly divergent dynamics of public servants' productivity with respect to private employees, along the lines of Baumol's cost disease argument (Baumol and Bowen, 1966).[47] Using OECD data, we have constructed an index for government consumption price deflator over GDP deflator. The inclusion of such an index in our empirical models does not appear to make any difference in our previous results: the index is indeed never significant, while the sign and significance of all other regressors remain unaltered. We interpret the lack of significance of the index in light of the fact that, on average, more than half of Italian municipal spending on culture is for museums, galleries and libraries, fields in which Baumol's cost disease is probably not as serious as in the performing arts.

An alternative specification we have considered includes some variables capturing the role of a city as a touristic destination. It may be argued, in fact, that the ability by a city to attract touristic flows is captured only at a weak extent by the monument variable. We have thus tried several alternative specifications, introducing, among the explanatory variables, the number of hotels in a city, the

[45] These result is in line with Werck, Heyndels and Geys (2008).

[46] The results of these estimates are omitted and are available upon request.

[47] We are grateful to one referee for this suggestion.

number of other types of touristic accommodations (such as *bed&breakfast*, camping sites and similar) or combinations of these variables.[48] We have also tried these variables normalized to the city's population. Available data on the number of hotels and other accommodations in each city come from the Italian national statistical office (ISTAT) and refer to 2005.[49] Generally speaking, these variables are not significant, except in some of the models in which the dependent variable is cultural spending over total spending, where, surprisingly, they have negative sign. One possible reason for these variables not being significant in explaining the cultural expenditure across Italian cities may be related to the fact that the number of hotels in a city also depends on the distance of the city from surrounding areas exerting a touristic appeal, such as mountains, lakes or the sea, or on other aspects of a city's economic life, such as being a business or a university town.[50] As for the other regressors, the inclusion of variables accounting for tourism does not generally alter the main results, the only exception being the estimated coefficient of *Log Pop*, which, as expected, often becomes significantly negative.

A third line of extensions we have considered is the inclusion of public finance variables. Recent empirical works highlight the relevance of fiscal variables in explaining cultural spending (Nooman, 2007). In particular, we estimate an alternative specification of our model including, among the regressors, aggregate transfers from central government. We have found that this variable is not significant either, possibly because we use an aggragate measure which is the same for all cities at year *t*.

We have also tried several other specifications in which we have included on the right hand side other economic variables such as provincial added value, or geographic dummies for the autonomous regions. However, none of these variables have turned out to be significant, while very little changed concerning the estimated sign, size and significance of the coefficients of the above discussed variables. Finally we have experimented a lot with a variable constructed as the proportion of a city's population having a high school diploma. Though sometimes significant, its coefficient's magnitude and sign are not very robust. The overall estimates of these extensions suggest that the above presented results seem robust to alternative specifications of the model.

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[48] We have also considered alternative variables to capture the ability of a city to attract touristic flows. However, we finally decided not to include other available variables, such as the number of tourists' arrivals in a city, to avoid potential endogeneity problems.

[49] As one can realistically expect small variations in the number of hotels and accommodations from one year to another, we have used the 2005 data for each year in our panel.

[50] This seems to be confirmed by the fact that the correlation of these variables with *Monument* is typically low.

8. Conclusions.

Public spending on culture, generally a small portion of total public spending, is soon to become a fast growing figure in national accounts. The economic literature finds interesting interpretations of this trend, and identifies culture as a key to a nation's growth and competitiveness.

Yet fiscal policy has since long been proved to be subject to the distorting incentives of political actors, and public spending on culture may be no exception.

We have used data on 106 Italian cities over the 1998-2005 period and have verified that, though political orientation does not seem to play a role, indeed some determinants of public expenditure on culture are political. In particular, we have identified an electoral cycle in which the incumbent spends less on culture around the election year. This challenges the common view of more museum openings around election dates, and makes sense only if voters prefer other types of public spending rather than culture.

These findings stress that, in line with other theoretical and empirical works on the subject (Alesina and Tabellini, 1990; Perotti, 1996), it is important to consider the effects of political variables not just on the size of government, but on its nature, namely the composition of public expenditure.

As for the implications for policy-making, the experience of Italian municipal governments shows that pleasing voters who ignore the positive contribution of cultural public spending to growth is a common practice, though perhaps a short-sighted behaviour. Given this kind of voters' preferences, the alternative option, a consistent public commitment in cultural spending, is possible only if it goes along with an appropriate communication and education strategy.

Data appendix.

Data	*Source of data*
Political Data	**F. Padovano for IREF** (*Institut de Recherche Economique et Fiscal*)
Municipal government budgetary data	**Home office** *(Ministero degli Interni)* http://finanzalocale.interno.it/sitophp/home_finloc.php?Titolo=Certificati+Consuntiv
Socio-economic variables and price deflator	**ISTAT**
Number of cultural clubs	**F. Buonanno (**elaborating on ISTAT)
Monument	**Carta del Rischio, ICR** *(Istituto Centrale del Restauro - Ministry of Culture)*
Private spending on culture	**ACRI** *(Associazione di Fondazioni e di Casse di Risparmio)*

We have constructed our political series after integrating the IREF database with the data referring to Aosta, Bolzano, Trento, Pordenone, Udine, Gorizia, Trieste and some Sicilian cities, which were partially missing. As far as the electoral dummy *Electyear* is concerned, we have classified as *1* all electoral years, which are different in every city. The classification of a party as left or right-wing has been made according to IREF; we only added *Union Valdotaine* to the group of left-wing parties, as it was not mentioned in Padovano's file. The left-right dimension has been recorded in *Leftright* along the *0* (right) – *1* (left) scale; mayors belonging to "civic lists" and "not classified" parties (a very small minority) have been coded as missing. In electoral years, no matter the election date (usually in late Spring, sometimes in Autumn) the left-right dummy reflects the political stance of the incumbent. Centre party mayors are very few. Finally, we have constructed the *Termlimit* dummy starting from IREF's information about mayors' names and from the consideration that Law 81/1993 prescribes that:
- a two-term term limit is effective since 1993;
- a third candidature is possible if either mandate has ended before the mid-term date for any reason but voluntary resignation.

Data about banking foundations' cultural spending have been provided by ACRI. It is not infrequent the case of banking foundations spending in more than one city. We have therefore elaborated ACRI's data on banking foundations' spending on culture in a number of cases:

1. some banking foundations are not from a provincial administrative centre, but from a smaller town. We have considered in this case the province in which the town is located, and have imputed 25% of their total spending to its administrative centre;
2. the names of some banking foundations refer to both a smaller town and its administrative centre, or to the administrative centre and its province. We have imputed 50% of their total expense to the administrative centre;
3. the names of some of them include a number of administrative centres. In this case we have divided the spending figure according to weights reflecting their population;
4. finally, the name of 4 banking foundations refers to a region (including many provinces), and one to two regions. In this case, just like in 2, we have assumed only half of their total spending goes to provincial administrative centres, the rest being directed to smaller towns, and we have used the same criteria as in 3 in order to calculate the share of expenditure in favour of each provincial administrative centre.[51]

[51] Fondazione Banca Nazionale delle Comunicazioni was neglected, as it did not have a territorial reference. Its expenditure on culture is however negligible.

The use of weights based on the relative size of towns may sound arbitrary but we believe it may closely reflect the marketing strategies and the effect of political influence on banking foundations' decisions.
ACRI only provides the distinction between capital and current cultural spending at an aggregate level. In the years we consider, the weight of capital on total cultural spending is stable around 40%. Therefore, in order to have current private cultural spending in each city, we consider only 60% of the amount calculated as illustrated above. The variable thus obtained is expressed in constant 2007 prices.

In Table A we summarize the statistical properties of all the data we use (except the political and geographical dummies):

Table A – Summary statistics

	Variables used in regression analysis	Mean	S.D.	Min	Max
Cultural spending	Per capita municipal current spending on culture at constant 2007 prices	44.62341	29.61828	0	257.5495
Expenditures on libraries, museums etc.	Per capita municipal current expenditure in libraries, museums and galleries at constant 2007 prices	17.69949	15.25392	0	102.3353
GDP	Per capita provincial GDP at constant 2007 prices	21,390.46	5,356.873	10,323.66	38,248.12
Unempl.	Provincial unemployment, in percentage points	9.36044	7.02142	0.08333	35.00000
BFexp.	Municipal banking foundations per capita cultural spending at constant 2007 prices	10.01716	20.87994	0	219.1284
Monument	Municipal number of cultural goods, normalized on a 0-7 scale	4.16037	1.25318	1	7
Log Pop	Log of city population	11.46124	0.861671	9.622781	14.76625
Oldpopul	Proportion of over 65 on total city population, in percentage points	20.57566	3.519295	11.26915	28.65310
Youngpopul	Proportion of under 15 on total city population, in percentage points	12.84805	2.152504	8.586949	20.08328
Failmandsch	Proportion of people failing completion of mandatory school on total city population, in percentage points	10.08774	3.029671	4.46000	18.08000
Cultsociety	No. of cultural clubs per 100.000 inhabitants (province)	40.15435	17.41459	12.72	102.49

Table 1: Determinants of Italian municipal cultural spending, 1998-2005.

	Gross current cultural expenditure, per capita levels			Gross current cultural expenditure over total current expenditure			Net current cultural expenditure, levels
	FE	**GMM**	**RE**	**RE**	**GMM**	**FE**	**RE**
Dep. Var. (-1)		0.30653*** (0.0000)			0.29567*** (0.0001)		
Gdp	-0.00019 (0.6360)	-0.00049 (0.3558)	0.00007 (0.8258)	2.01E-07 (0.4602)	-5.08E-07 (0.3529)	-7.24E-08 (0.8283)	0.00032 (0.2778)
Unempl.	-0.35159 (0.2147)	0.72671 (0.4729)	-0.05108 (0.8316)	-3.49E-05 (0.8630)	0.00014 (0.8450)	-0.00025 (0.2713)	0.08295 (0.7146)
BFexp	0.10870** (0.0379)	0.71179*** (0.0000)	0.14676*** (0.0015)	6.68E-05* (0.0855)	0.00023** (0.0233)	5.17E-05 (0.2192)	0.13521*** (0.0017)
Monument			8.19159*** (0.0000)	0.00560*** (0.0045)			7.17071*** (0.0000)
Log Pop.	32.17756 (0.3118)	-9.26498 (0.9155)	-2.94449 (0.2679)	-0.00483* (0.0804)	0.02973 (0.6936)	0.06281* (0.0146)	-2.21624 (0.3558)
Oldpopul	-0.03749 (0.9730)	-1.30886 (0.6844)	0.63828 (0.3963)	0.00078 (0.2478)	0.00029 (0.8972)	0.00027 (0.7625)	0.83178 (0.2404)
Youngpopul	0.61166 (0.6675)	-5.99417* (0.0514)	-1.88086* (0.0922)	-0.00031 (0.3406)	0.00046 (0.8818)	0.00104 (0.3653)	-1.48501 (0.1598)
Failmandsch			0.97078 (0.2684)	0.00086 (0.3406)			0.85858 (0.2791)
Cultsociety	0.07298 (0.6701)	-0.19829 (0.5213)	-0.02328 (0.8195)	-1.81E-06 (0.9849)	-0.00025 (0.3039)	6.14E-05 (0.6574)	0.04642 (0.6230)
Electyear	-2.97370** (0.0120)	-4.22140** (0.0340)	-3.05951*** (0.0094)	-0.00267*** (0.0050)	-0.00301*** (0.0050)	-0.00249*** (0.0092)	-2.90761*** (0.0094)
Termlimit	-2.16316* (0.0696)	-8.90058 (0.1628)	-1.67472 (0.1471)	-0.00067 (0.4738)	-0.00508 (0.1879)	-0.00102 (0.2869)	-1.37566 (0.2063)
Leftright	0.14290 (0.9320)	9.13670 (0.1357)	0.87194 (0.5786)	-0.00061 (0.6368)	0.00677 (0.1624)	-0.00114 (0.3971)	0.88560 (0.5574)
Centre-North			17.69252*** (0.0030)	0.01936*** (0.0014)			14.18323*** (0.0087)
No. Of obs	800	581	800	795	575	795	782
Cities	106	106	106	106	106	106	106
Rsquare	0.8182		0.4483	0.3497		0.8508	0.4631
Sargan test		0.2288			0.0438		

Table 2: Determinants of Italian municipal spending, 1998-2005 (controls omitted)

	FE	RE
Electyear1	-7.68006 (0.4229)	-6.52056 (0.4948)
Termlimit	-33.11292*** (0.0005)	-34.02382*** (0.0003)
Leftright	20.52111 (0.1325)	24.00819* (0.0645)
R-square	0.8227	0.2849

Table 3: Determinants of sub-categories of Italian municipal cultural expenditures, 1998-2005.

Dependent variable	Gross current expenditure for libraries, museums and galleries (levels)			Gross current expenditure for theatres, cultural activities and services (levels)		
	FE	**GMM**	**RE**	**FE**	**GMM**	**RE**
Dep. Var. (-1)		0.43196*** (0.0000)			0.31396** (0.0184)	
Gdp	0.00007 (0.6760)	-0.00019 (0.5506)	0.00013 (0.3489)	-0.00026 (0.4012)	-0.00053 (0.3315)	-0.00013 (0.5699)
Unempl.	0.03048 (0.7897)	0.39038 (0.4108)	0.11374 (0.2707)	-0.38208* (0.0780)	0.59740 (0.5544)	-0.20053 (0.2750)
BFexp	0.08004*** (0.0002)	0.24528** (0.0152)	0.08228*** (0.0000)	0.02866 (0.4735)	0.35607*** (0.0002)	0.06433* (0.0678)
Monument			2.89996*** (0.0099)			5.41854*** (0.0002)
Log Pop.	5.17958 (0.6866)	-48.12490 (0.3498)	-0.13382 (0.9320)	26.99798 (0.2671)	-17.83406 (0.8025)	-2.89669 (0.1533)
Oldpopul	0.65554 (0.1434)	0.88584 (0.4027)	0.91440** (0.0104)	-0.69304 (0.4139)	-1.37547 (0.5941)	-0.34336 (0.5502)
Youngpopul	1.39305** (0.0156)	0.54472 (0.7240)	0.74699 (0.1350)	-0.78139 (0.4730)	-5.80324* (0.0817)	-2.16267** (0.0114)
Failmandsch			-0.02505 (0.9612)			0.88883 (0.1844)
Cultsociety	0.06368 (0.3572)	0.14819 (0.3446)	0.01569 (0.7575)	0.00929 (0.9434)	-0.47889 (0.1418)	-0.00562 (0.9425)
Electyear	-0.93344* (0.0504)	-0.76736 (0.3804)	-0.95206** (0.0452)	-2.04026** (0.0241)	-2.99018*** (0.0087)	-2.10315** (0.0194)
Termlimit	-0.39422 (0.4122)	-3.27940 (0.2128)	-0.35499 (0.4514)	-1.76894* (0.0523)	-4.47997 (0.1593)	-1.33010 (0.1321)
Leftright	-0.80327 (0.2351)	0.25428 (0.9166)	-0.67809 (0.3006)	0.94618 (0.4603)	9.29423** (0.0440)	1.45240 (0.2263)
Centre-North			11.70561*** (0.0006)			6.95536 (0.1258)
No. Of obs	800	581	800	800	581	800
Cities	106	106	106	106	106	106
Rsquare	0.8951		0.4052	0.7492		0.2749
Sargan test		0.4194			0.3831	

Table 4: Determinants of Italian municipal cultural spending (1998-2005): geographical differences.

	Gross current cultural expenditure, levels		Gross current cultural expenditure over total current expenditure	
	North-Centre	**South**	**North-Centre**	**South**
Electyear	-3.00146* (0.0691)	-2.98161*** (0.0021)	-0.00251* (0.0529)	-0.00297*** (0.0060)
Termlimit	-3.04401* (0.0605)	1.07969 (0.2679)	-0.00169 (0.1868)	0.00151 (0.1631)
Leftright	1.16154 (0.6062)	-0.76290 (0.5462)	-0.00059 (0.7443)	-0.00126 (0.3641)
No. of obs	546	254	541	254
Cities	70	36	70	36
Rsquare	0.3143	0.1920	0.1771	0.1974

All models are estimated with the Random Effects LS estimator.

Table 5: Determinants of Italian municipal cultural spending, 1998-2005 including spatial interaction terms. Results from IV (2SLS) estimates.

Panel A: First stage regression

	Dependent variable: municipality's per capita current level of gross cultural expenditure
BFexp	0.1773*** (0.0435)
Monument	10.0317*** (1.6395)
Rsquare	0.328
F-test	58.44

Panel B: Second stage regression

	Gross current cultural expenditure, levels (no spatial interaction)	**Gross current cultural expenditure, levels, with spatial interaction terms**		
	RE	**3a model**	**3b model**	**3c model**
Neighbexp		0.03217** (0.0116)	0.02853* (0.0128)	0.04817** (0.0243)
Gdp	0.00007 (0.8258)	0.00165 (0.9336)	0.00194 (0.2672)	0.00083 (0.4537)
Unempl.	-0.05108 (0.8316)	-0.05912 (0.2578)	-0.04289 (0.3631)	-0.04642 (0.1467)
BFexp	0.14676*** (0.0015)	0.09813** (0.0292)	0.09654* (0.0386)	0.08753** (0.0321)
Monument	8.19159*** (0.0000)	6.83713*** (0.0127)	5.93516*** (0.9128)	6.14158*** (0.5896)
Log Pop.	-2.94449 (0.2679)	-2.43285 (1.4407)	-2.71615 (1.6983)	-3.85094 (1.5793)
Oldpopul	0.63828 (0.3963)	0.65147 (0.7133)	1.62338 (1.1593)	1.1675 (1.2484)
Youngpopul	-1.88086* (0.0922)	-2.3472 (1.4495)	-2.46772 (1.3854)	-1.6681 (1.3947)
Failmandsch	0.97078 (0.2684)	0.94964 (1.3118)	1.32841 (0.9967)	0.89357 (0.8872)
Cultsociety	-0.02328 (0.8195)	-0.04149 (0.1436)	-0.05485 (0.0893)	-0.12466 (0.1352)
Electyear	-3.05951*** (0.0094)	-2.81356* (1.2418)	-2.9674* (1.2905)	-3.4196** (1.6536)
Termlimit	-1.67472 (0.1471)	-1.95624 (1.1984)	-0.89025 (1.3276)	-2.38864 (1.7562)
Leftright	0.87194 (0.5786)	0.84337 (1.4762)	1.13829 (0.9365)	0.9237 (0.7164)
Centre-North	17.69252*** (0.0030)	14.05785*** (0.6648)	9.84663*** (0.5928)	12.69252*** (0.8974)
No. Of obs	804	804	804	804
Cities	106	106	106	106
Rsquare	0.4483	0.4169	0.3826	0.3957
Moran I test	1.347*			
LM-LAG test	2.84*			
LM-ERR test	2.16			
Hansen-J test		0.87	1.25	1.13

Note:. *Panel A presents first stage estimates of IV regression. Dependent variable is the per capita gross cultural expenditure by a municipality. Panel B presents the results from second stage 2SLS estimates on a panel of 106 Italian cities during years 1998-2005. Dependent variable is the municipal per capita gross cultural expenditure. The explanatory variable* Neighbexp *is the average cultural spending by cities whose provinces are contiguous to a municipality according to the specific definition of neighbourhood and spatial weight matrices in models (3a-c). The F-test statistics in Panel A refers to the null hypothesis that the coefficients of the instruments are jointly equal to zero in the first stage regression. The Moran-I statistic in Panel B tests for the presence of spatial dependence in the residuals of the panel RE model with no spatial interaction. The LM-LAG and LM-ERR tests in Panel B assess whether the spatial dependence in the residuals is more likely to derive from the spatial lag, or the spatial error model, respectively, and are both distributed as a* $\chi^2(1)$*. The Hansen-J test is a test for over-identification of restrictions and is distributed as a* $\chi^2(1)$ *under the null that instruments are valid.*

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