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Mayoral partisanship and city size heterogeneity

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Abstract

Does partisanship have the same impact on public spending regardless of city size and density ? The existing literature is mixed. Based on a regression discontinuity design, I show that political colour has a large impact on public expenditures of French municipalities with more than 3,500 inhabitants. Left-wing mayors invest substantially more than their right-wing counterparts in both small and large cities, but in different spending areas. In contrast, differences in current expenditures concern only small municipalities. These findings highlight that city size and density may explain the conflicting results in the literature.

Introduction

Voter turnout is an essential indicator of the quality of a democracy (Schmitter 2004). However, voter turnout has declined worldwide from 76% in the late 1980s to 66% in 2011 [1] and is even lower in local elections (Solijonov 2016 ; Kouba, Novák et Strnad 2021). Since government budget transparency is directly linked with an increase in participation (Benito et Bastida 2009), understanding the effects of partisanship on local public expenditures may invigorate voter turnout.

Existing literature has shown mixed evidence of the effects of partisanship on local budgets. Some authors emphasize the role played by political parties in economic outcomes (Pettersson-Lidbom 2008 ; Le Maux, Rocaboy et Goodspeed 2011 ; Gerber et Hopkins 2011 ; de Benedictis-Kessner et Warshaw 2016 ; Beland et Oloomi 2017 ; Hill et Jones 2017), while others highlight the lack of partisanship effects on public expenditures (Ferreira et Gyourko 2009 ; Leigh 2008). Ferreira et Gyourko (2009) and de Benedictis-Kessner et

1. The drop-off in voter turnout concerns legislative elections. The heterogeneity of institutions across countries (level of centralisation, layers of jurisdictions, etc.) makes international comparisons difficult.

Warshaw (2016) analyse partisanship effects in U.S. municipal elections but reach contradictory results. Although de Benedictis-Kessner et Warshaw (2016) use a larger data base, the main difference between these studies is the lower bound on city size (75,000 population with partisan effects versus 25,000 population with no effects). Thus, the conflicting results in the literature can be explained by population size.

The impact of political parties may differ by population size, which interacts with local public expenditures through economies of scale or economies of sharing, for example (Buettner, Schwager et Stegarescu 2004 ; Breunig et Rocaboy 2008 ; Buettner et Holm-Hadulla 2013). The literature also highlights the effects of density on public expenditures (Ladd 1992 ; Holcombe et Williams 2008 ; Breuillé et al. 2019 ; Breuillé et al. 2020).

In this paper, I investigate the heterogeneous influence of city size and density to clarify its effects on partisanship. With more than 35,000 municipalities, France is an ideal field of investigation to study this heterogeneity. First, I analyse the impact of political parties on public expenditures in French municipalities after the 2008 elections. I use a regression discontinuity design (RDD) with covariates selected with machine learning to increase the efficiency of the estimations. I find strong effects of partisanship ; left-wing mayors invest 30 euros more per capita in urban planning and environment and 3.7 euros per capita more in family aid, while right-wing ones invest 2.4 euros more per capita in security. Second, I build four groups of municipalities based on their size and density using a k-means algorithm. Finally, I estimate partisanship effects on each group of municipalities using an RDD with covariates. I also control for the false discovery rate to obtain robust estimates. I find that partisanship affects budget allocation and total expenditure in both small and large municipalities. While capital expenditures are affected in a range of areas (security, education, family, urban planning and environment), current expenditures are affected only in security and in small municipalities.

The article is organised as follows. First, I discuss the previous literature on partisan effects on local governments. Next, I present the institutional background and the data. I also discuss the empirical strategy, followed by findings on the impact of political families on local public expenditure. Then, I analyse heterogeneous treatment effects using machine learning to find optimal clusters of French municipalities. Finally, I conclude and highlight challenges for further research.

1 Partisanship and behaviour of elected candidates

The empirical evidence of partisanship effects is mixed. On the one hand, some authors point out the existence of partisanship effects on different outcomes. In a seminal paper, Lee, Moretti et Butler (2004) analysed the behaviour of representatives in the U.S. House. They demonstrate that candidates have fixed policy preferences which do not change once elected. Petterson-Lidbom emphasizes the influence of party control in Swedish local governments on several aggregated economic outcomes, such as total public expenditures and employment (Pettersson-Lidbom 2008). Specifically, left-wing governments raised taxes and public spending about 2 to 3 % more than right-wing ones between 1974 and 1994. Similarly in France, social *départements* expenditures are highly determined by the political party in power, especially if the majority is not fragmented (Le Maux, Rocaboy et Goodspeed 2011). Analogous results were found by Gerber and Hopkins while analysing 134 mayoral elections in large U.S. cities with more than 170,000 inhabitants (Gerber et Hopkins 2011). Likewise, de Benedictis-Kessner and Warshaw highlight differences of more than $100 per capita due to partisanship in large U.S. cities (de Benedictis-Kessner et Warshaw 2016).

More recently, analysis of capital spending at the U.S. state level between 1960 and 2012 found that Democratic governors allocate more of the budget to education and health, but with similar total spending to Republicans (Beland et Oloomi 2017). Focusing on budget allocation rather than total spending may be relevant to highlight differences between policy families. To test this hypothesis, Hill et Jones (2017) analyse the willingness of politicians to promote specific policy areas through budget allocation, given fixed total expenditure. They find that school districts with a high proportion of minority students get larger state transfers when the Democrats are in power. On a national level, Herwartz demonstrates that the size of the public sector is highly influenced by ideology (following the left-right typology) for a panel of OECD countries (Herwartz et Theilen 2017). These differences in policies are strengthened in time of economic contraction : left-wing governments are associated with an increase in public expenditures while right-wing ones are linked to austerity.

On the other hand, several studies outline the lack of partisanship effect. Ferreira et Gyourko (2009) observed no difference in local public expenses between political parties in U.S. cities with more than 25,000 inhabitants (Ferreira et Gyourko 2009). These results are attributed to Tiebout sorting, which states that individuals migrate to municipalities where their preferences are best represented (Tiebout 1956). This phenomenon leads to homogeneity within cities that allows no political divergence. A comparable conclusion is drawn by Leigh, revealing only slight differences in outcomes between Democrats and Republicans in U.S. States from 1941 to 2002 (Leigh 2008).

While most studies at the national or regional level find that partisanship has a significant effect on public expenditures, those on local governments are much more mitigated. Heterogeneous city sizes may be one of the main reasons explaining the contradictory results. As stated by de Benedictis-Kessner et Warshaw (2016), small cities are less subject to ideology because they have less power. Thus, partisanship does not have a homogeneous impact according to city size. It may explain the diversity of results across three studies of U.S. mayoral elections using different lower population limits (Ferreira et Gyourko 2009 ; Gerber et Hopkins 2011 ; de Benedictis-Kessner et Warshaw 2016).

Since public goods are supposed to be non-rival in consumption, the per capita cost of a unit of public good output should decrease when population grow. However, the effect of city size is not uniform across spending areas because not all public goods are non-rival (Buettner, Schwager et Stegarescu 2004). Thus, the provision of local public goods is related to city size and may be subject to political ideology favoring one spending area or another. Moreover, because population and density are highly correlated, studying both simultaneously ensures that an effect is not artificially attributed to one or the other (Holcombe et Williams 2009). Focusing on

the average effect of political parties on public expenditures is therefore incomplete and masks many heterogeneous mechanisms related to city size and density.

2 Institutional background and data

2.1 Institutional background

There were almost 36,000 *communes* in France in 2008. These are the first level of democracy, followed by inter-municipalities, *départements* and regions. Elections are organised every six years to elect the municipal council. In municipalities of more than 3,500 inhabitants (in 2008), the list that receives more than 50% of the votes gets half of the available seats in the municipal council. The remaining seats are allocated in proportion to the score of each list (including the first). A second round is held if there is no absolute majority in the first round. The list that receives the most votes gets half of the available seats. The remaining seats are also allocated proportionally to the score of each list (including the first). Winning the election therefore guarantees a majority on the municipal council. A mayor is then elected within the municipal council to manage the city.

Municipalities have a wide range of general competences. For example, they manage urban planning and building permits, social housing, municipal police, municipal libraries, primary schools, childcare centers and sports facilities. To carry out these missions, French municipalities collect local taxes (residential tax, property tax) and benefit from equalisation. They then spend their budget according to the decisions of the municipal council. The rules for accounting reports depend on the size of the city. Specifically, municipalities with a population of more than 3,500 inhabitants must report their expenditures by expenditure area. These are the dependent variables that I will use in this paper.

2.2 Municipal data

Public expenditure data for cities with more than 3,500 inhabitants over the 2008-2014 period are from the French General Directorate of Public Finances (DGFIP). For each city, capital and current expenditures for the 2008-2014 municipal term are broken down following the M14 nomenclature [2]. Table 1 shows that there is strong variability in each spending item. Municipalities have, on average, higher current expenditures than capital outlays. Column 5 presents the proportion of total capital expenditures and indicates that the largest area of expenses is urban planning and environment (39.5%) followed by general services (22.6%) and education (10.6%). Columns 9 shows that municipalities allocate current expenditures across spending items in the same order of magnitude as capital expenses. The negative values in columns 5 and 9 of Table 1 represent cases where revenues exceed expenditures.

2. The M14 nomenclature is the legal framework that defines the accounting rules for French municipalities.

TABLE 1 – Municipal expenditure data

	Capital expenditures				Current expenditures			
Spending items	Min	Mean (euros per capita)	Max	Proportion of total expenditures	Min	Mean (euros per capita)	Max	Proportion of total expenditures
General services	-48.41	79.99 (79.89)	1619.56	22.56%	33.66	387.99 (167.85)	1993.10	38.69%
Security	-0.02	2.88 (7.28)	158.01	0.81%	0.00	37.14 (32.45)	280.23	3.7%
Education	0.00	37.74 (40.38)	343.47	10.64%	0.00	152.43 (58.97)	446.03	15.2%
Culture	-0.46	28.02 (36.48)	356.36	7.9%	0.00	69.06 (52.11)	381.71	6.89%
Sports and youth	0.00	42.56 (44.30)	622.42	12%	0.00	102.33 (66.63)	787.37	10.21%
Social and public health	0.00	4.68 (14.06)	303.89	1.32%	-35.77	37.50 (36.58)	297.06	3.74%
Family	0.00	7.53 (16.64)	322.73	2.12%	0.00	48.32 (52.03)	363.71	4.82%
Housing	0.00	5.13 (16.35)	389.17	1.45%	-0.22	3.70 (9.12)	152.78	0.37%
Urban planning and environment	0.00	140.03 (100.30)	1106.33	39.49%	0.00	151.72 (93.20)	1319.94	15.13%
Economic stimulus	-6.14	6.06 (19.51)	313.56	1.71%	-6.04	12.50 (32.71)	805.98	1.25%
Total expenditures	33.48	354.63 (177.38)	2602.26	100%	336.57	1002.70 (350.45)	5366.70	100%

Notes : The variables are from DGFIP for the 2008-2014 period. Standard deviations are in parentheses.

Data on the 2008 municipal election for cities with more than 3,500 inhabitants are from the Ministry of the Interior. It includes vote shares and the number of municipal seats won by each electoral list. The broad French political spectrum is composed of many parties, among which, the Union for a Popular Movement (UMP) and the Socialist Party (PS) were dominant in the right-wing and left-wing of the spectrum respectively in 2008. I create a left and a right aggregate from a list of parties reported by the Cevipof[3]. Table 2 shows that parties of this typology have won the majority of elections in municipalities with populations of more than 3,500. Specifically, left-wing and right-wing parties respectively won 48.8 % and 47.7 % of total races. I keep only municipalities where the grouped families of our typology are directly opposed. This brings the number of observations to 1,742. Finally, as mayors in Paris, Marseille and Lyon are elected indirectly by the district mayors, I exclude them from this analysis. The cities in the data are shown on the map in Figure 1, along with the election results.

3. Centre de recherches politiques de Sciences Po or "Centre for Political Research at Sciences Po", Paris.

TABLE 2 – Classification of political parties

Code	Signification (French)	Signification (English)	Number of elections won	Classification
LEXG	Liste d'extrême gauche	Far Left List	0	
LCOM	Liste du Parti Communiste	List of the Communist Party	55	
LUG	Liste d'union de la gauche	List of the Union of the Left	552	
LSOC	Liste du Parti Socialiste	List of the Socialist Party	337	Left
LVEC	Liste des Verts	Green List	8	
LDVG	Liste divers gauche	List of various leftists	370	
LGC	Liste gauche-centristes	Left-Centrist List	50	
LAUT	Autre liste	Other list	14	
LREG	Liste régionaliste	Regionalist list	3	
LCMD	Liste centre-MoDem	Centre-Democratic Movement (MoDem) list	30	
LMC	Liste majorité-centristes	Majority-Centre List	61	
LMAJ	Liste de la majorité (UMP)	List of the majority (UMP)	584	Right
LDVD	Liste divers droite	List of various right-wingers	647	
LFN	Liste du Front National	National Front List	0	
LEXD	Liste d'extrême droite	Far Right List	0	

Source : Cevipof modified by the author

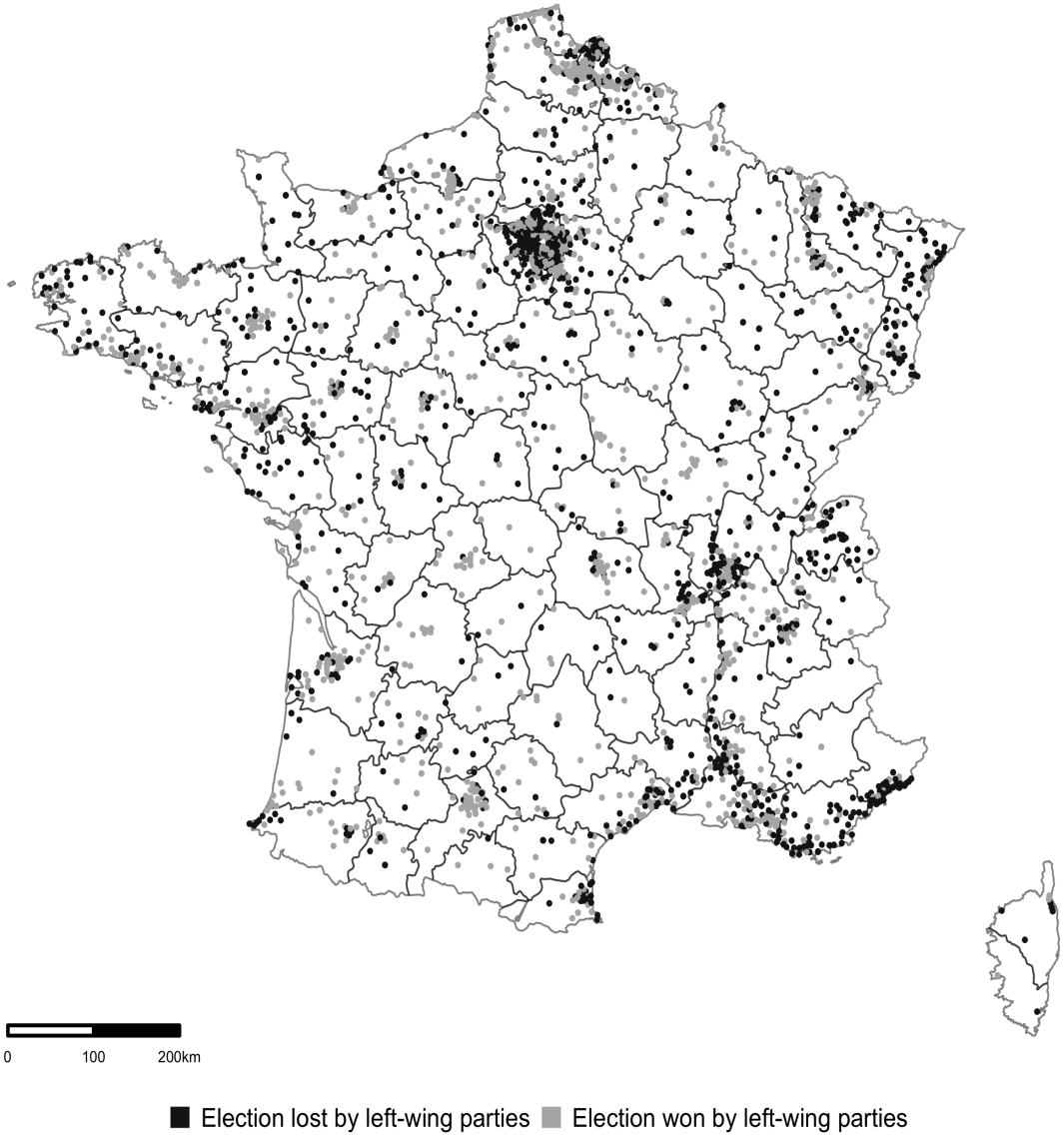

FIGURE 1 – Territory coverage of our sample

The 2002-2007 socioeconomic characteristics of municipalities with more than 3,500 inhabitants are from the French National Institute of Statistics and Economical Studies (INSEE) and DGFIP. Table 3 reports these covariates and highlights the heterogeneity of the 1,739 municipalities in the sample.

With mayors elected in March and quickly taking office, we exclude 2014 data from the sample. Symmetrically, the new city council votes on the budget after it takes office, hence we keep the 2008 expenditures in the sample. Since local governments increase public spending in the years before elections (FOUCAULT, MADIES et PATY 2008), I average expenditure data over the 2008-2013 period to remove the effects of the electoral cycle. The use of annual data may yield noisy results if there is partisan heterogeneity in the magnitude of election cycles.

TABLE 3 – Control variables

	Min	Mean	Max
Population	3,015.50	15,441.58	438,584.00
		(25,958.64)	
Average annual rate of change in employment	-5.83	1.69	11.99
		(1.76)	
Employment per capita	0.09	0.43	3.44
		(0.23)	
Proportion of individuals without high school diploma	13.97	38.71	64.39
		(8.60)	
Proportion of higher education graduates	5.26	21.28	60.58
		(8.69)	
Unemployment rate	3.78	11.27	30.40
		(4.18)	
Proportion of unoccupied housing	0.32	5.82	19.92
		(2.90)	
Proportion of secondary residences	0.00	4.62	87.99
		(10.50)	
Proportion of social housing	0.00	16.63	71.09
		(11.69)	
Proportion of residences built before 1946	0.47	22.63	63.39
		(12.12)	
Proportion of foreigners in the population	0.00	4.93	37.10
		(4.62)	
Proportion of 65+ year olds in the population	2.38	17.27	40.09
		(5.38)	
Proportion of 18-24 year olds in the population	3.67	8.63	31.04
		(2.45)	
Median income	8,940.50	17,679.59	34,311.00
		(3,376.72)	
Tourist accommodation capacity (number of beds)	0.36	2,596.70	153,972.97
		(8,845.67)	
Surface area of the municipality (ha)	70.00	2,420.47	75,780.00
		(2,974.76)	
Number of municipalities in the intermunicipal cooperation	0.00	16.84	128.00
		(15.85)	
General Operating Grant per capita	73.18	238.35	1,142.75
		(100.93)	
Municipal debt per capita	0.00	916.32	5,245.13
		(553.37)	

Notes : The variables are from INSEE and DGFIP for the 2002-2007 period. Standard deviations are in parentheses.

3 Empirical Strategy

3.1 Regression Discontinuity Design

We use a regression discontinuity design to estimate the effect of local partisanship on public expenditures. The RDD takes advantage of a discontinuity along a reference variable to exhibit a jump in dependent outcomes interpreted as a causal effect. It is widely used in the literature testing the impact of partisanship since the seminal paper by Lee, Moretti et Butler (2004). In this paper, I exploit the majority bonus : the fact that lists winning the most votes are automatically attributed half of available seats in a municipal council. Thus, a large discontinuity in the number of seats appears between candidates with $(V - \epsilon)\%$ and $(V + \epsilon)\%$ vote share as it is illustrated by Figure 2. The difference in vote shares $X = V_{left} - V_{right}$ fully determines the elected list. A left-wing party wins the election if $X > 0$. Symmetrically, a right-wing party wins if $X < 0$. Assuming that public expenditures are continuous over X (*i.e.* an ϵ increase in a list's vote share should not create a jump in public expenditures, other than through the majority bonus), the difference in political party spending can be interpreted as a causal effect. Unlike the existing literature, I do not rely on the random assignment assumption which is extensively challenged because of the use of arbitrary bandwidths to create quasi-experiments. It also requires more hypotheses than the continuity assumption (see de la Cuesta et Imai (2016) for a clear overview of the discussion).

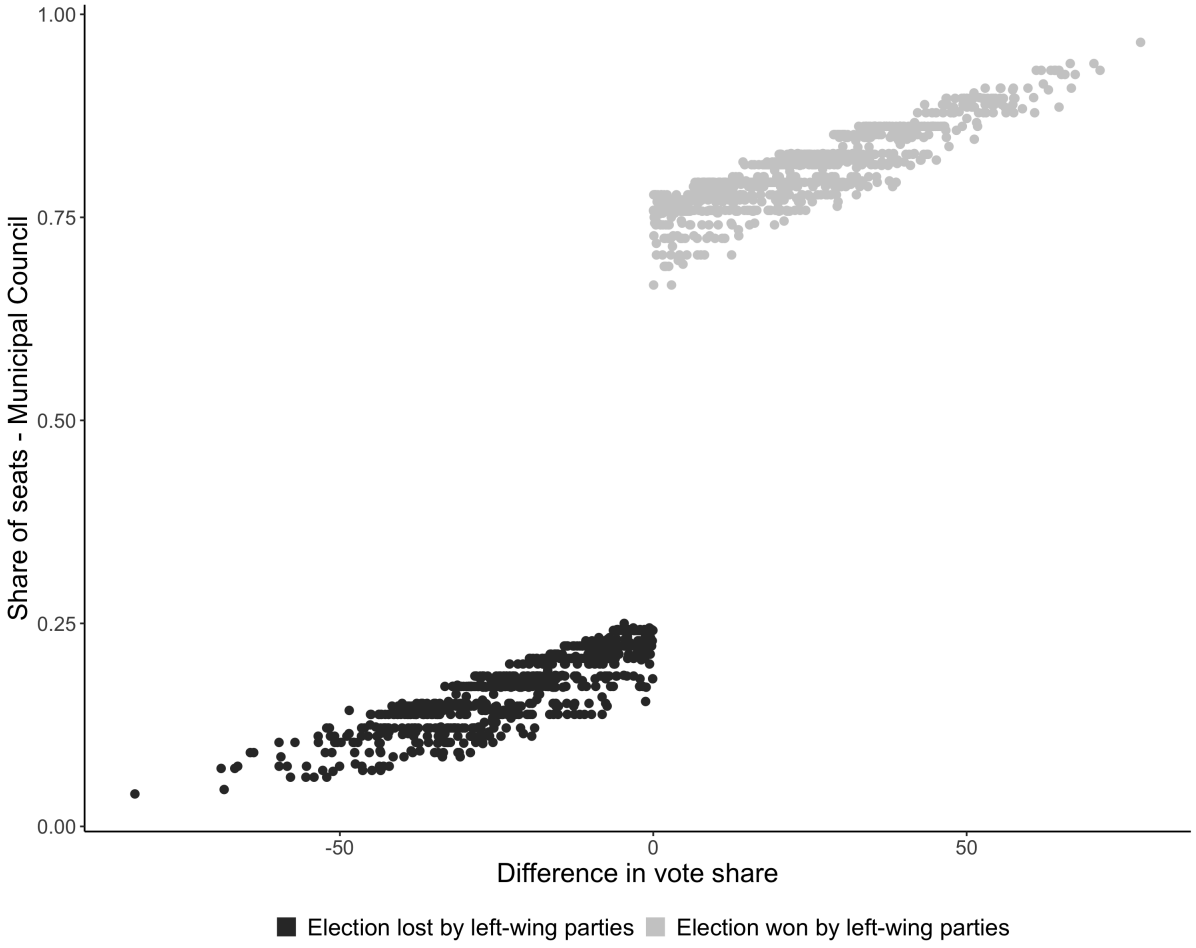

Figure 2 – Discontinuity on vote share differences

3.2 Estimation

I estimate the causal effect of partisanship on public expenditures using robust non-parametric local polynomial regressions of order 1 as recommended by (Calonico, Cattaneo et Titiunik 2014). Regressions of order 1 are more stable and are less likely to overfit the data than regressions of order 2. With the objective of increasing the precision of our estimates (Calonico et al. 2019), I include the socio-economic features of municipalities before the 2008-2014 political mandate. These covariates are selected using post-lasso to avoid multicollinearity and optimise the inference efficiency. Post-lasso is a two-step regularisation that is less biased than the widely used lasso (Belloni et Chernozhukov 2013). A triangular kernel is chosen to decrease the weight of observations far from the cutoff. Finally, the bandwidth is determined to minimise the mean squared error.

3.3 Validity of the RDD

The RDD validity is conditioned by the absence of sorting mechanisms which invalidate the hypothesis of exogenous treatment. In this context, this means that some candidates are more likely to be on one side of the cutoff than the other (see de la Cuesta et Imai (2016) for a discussion on sorting mechanisms in elections). Incumbency is one of the main sorting mechanisms encountered when studying close-race elections. Eggers et al. (2015) specifically rejects the hypothesis of incumbency effect for French municipal elections in 2008. This result is confirmed by the McCrary test : with a p-value of 0.76, we cannot reject the null hypothesis of continuity of the forcing variable (McCrary 2008). Figure 3 illustrates the continuity of the running variable.

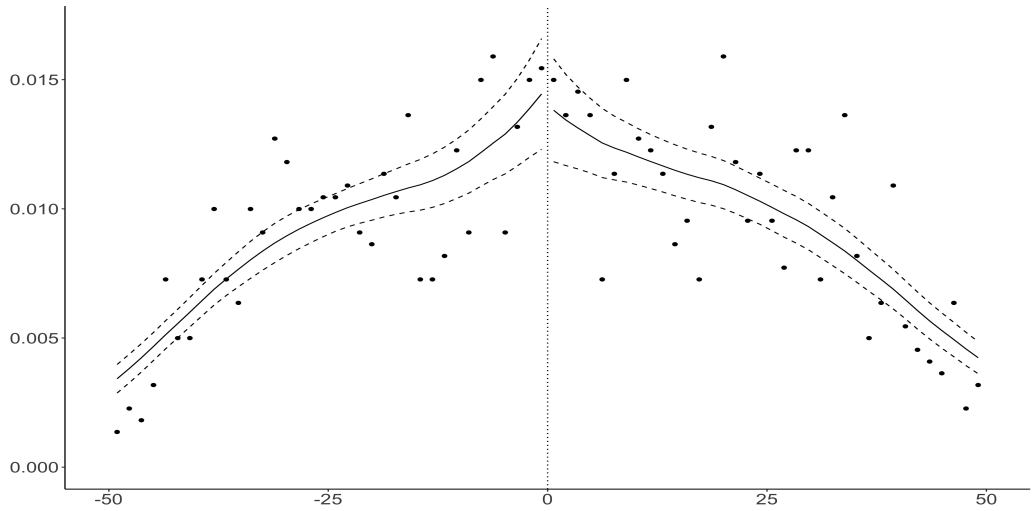

Figure 3 – Sorting McCrary test

Another important identification assumption concerns the treatment effect on predetermined covariates. Predetermined covariates should not be affected by the running variable at the cutoff. Thus, we run several local non-parametric regressions to highlight any discontinuity of these variables at the cutoff point. As we run 19 tests, there will be an average of 2 false positive features at the 10% level. Therefore, I use a Benjamini-Hoschberg correction to control the false discovery rate (Benjamini et Hochberg 1995). Table 4 shows that there is no statistically significant variable at the 5% level. The placebo effect on the proportion of individuals without a high school diploma and the proportion of unoccupied housing are significant at 10% without controlling for the false discovery rate. However, all of the 19 covariates are not affected by the

treatment when applying the Benjamini-Hoschberg correction displayed in column (5). Finally, we cannot reject the null hypothesis of continuity at the cutoff of any of these predetermined expenses along the forcing variable.

TABLE 4 – Placebo effect of the treatment

	Estimate	SE	p value	BH correction	Bandwidth
Population	0.110	0.160	0.500	0.840	18.890
Average annual rate of change in employment	-0.270	0.270	0.320	0.840	21.450
Employment per capita	-0.010	0.040	0.750	0.900	19.740
Proportion of individuals without high school diploma	2.580	1.490	0.080	0.790	18.650
Proportion of higher education graduates	-2.120	1.530	0.170	0.840	20.510
Unemployment rate	0.440	0.650	0.500	0.840	25.130
Proportion of unoccupied housing	0.900	0.510	0.070	0.790	19.660
Proportion of secondary residences	-2.190	1.780	0.220	0.840	24.280
Proportion of social housing	1.030	2.030	0.610	0.840	19.910
Proportion of residences built before 1946	1.660	2.100	0.430	0.840	19.530
Proportion of foreigners in the population	0.550	0.680	0.420	0.840	22.550
Proportion of 65+ year olds in the population	0.860	0.910	0.350	0.840	19.260
Proportion of 18-24 year olds in the population	-0.060	0.490	0.910	0.910	17.800
Median income	-471.480	573.870	0.410	0.840	20.720
Tourist accommodation capacity (number of beds)	848.110	1,507.860	0.570	0.840	13.040
Surface area of the municipality (ha)	-109.770	501.500	0.830	0.910	24.610
Number of municipalities in the intermunicipal cooperation	1.390	2.790	0.620	0.840	17.710
General Operating Grant per capita	-6.440	15.860	0.680	0.870	20.520
Municipal debt per capita	12.630	113.190	0.910	0.910	17.480

Finally, the validity of the RDD is based on the assumption of continuity of public expenditures over the difference in vote shares. Even if this assumption is hardly testable, I provide evidence of the lack of discontinuity on placebo cutoffs. Table 5 displays estimates for capital expenditures with different cutoffs and highlights that significant results are concentrated on the 0 cutoff. Similarly, Table 6 displaying the estimates for current expenditures shows the lack of patterns for placebo cutoffs.

TABLE 5 – Placebo cutoffs for capital expenditures

	Cutoff				
	-12	-6	0	6	12
General services	7.122	-12.038	0.753	-8.131	12.069
	(14.11)	(11.183)	(10.516)	(9.035)	(13.98)
Security	-0.061	-0.84	-2.332***	1.246	-0.586
	(0.91)	(1.454)	(0.867)	(0.772)	(0.693)
Education	6.354	4.842	7.506	4.158	-8.379
	(7.079)	(7.35)	(7.277)	(8.097)	(7.653)
Culture	14.703	2.385	6.242	-6.656	0.257
	(10.239)	(5.72)	(5.697)	(7.096)	(7.279)
Sports and youth	-4.207	5.423	-1.364	15.462*	-1.202
	(8.607)	(9.157)	(8.372)	(9.064)	(6.737)
Social and public health	2.313	-1.343	0.157	-2.206	-0.868
	(2.532)	(1.955)	(2.245)	(1.586)	(1.564)
Family	0.59	0.684	3.151*	-0.679	-2.334
	(4.679)	(1.94)	(1.912)	(2.818)	(2.245)
Housing	2.073	-2.468	0.129	2.881	-2.88
	(3.877)	(2.915)	(1.781)	(1.974)	(1.786)
Urban planning and environment	16.783	1.83	36.696***	-14.263	6.732
	(25.174)	(14.107)	(14.113)	(18.002)	(16.743)
Economic stimulus	-4.338	1.833	-0.008	-2.266	4.707
	(3.496)	(2.699)	(2.323)	(2.658)	(3.184)
Total expenditures	42.755	-1.313	65.422***	-10.851	9.115
	(40.797)	(23.867)	(24.453)	(24.191)	(25.734)

Notes : Estimates are calculated with a bandwidth minimising mean-squared errors and a triangular kernel (CALONICO, CATTANEO et TITIUNIK 2014). Standard deviations are in parentheses. Errors are clustered by inter-municipality.
*Significant at 10% ; **significant at 5% ; ***significant at 1%.

3.4 Heterogeneity in partisanship effects

I study heterogeneous partisanship effects with respect to the population by constructing clusters of municipalities. I also include the density along with city size to account for congestion issues. The clusters are formed with a data-driven method to avoid endogenous thresholds. I perform a k-means clustering on the logarithm of city size and density (HARTIGAN et WONG 1979). Following the Calinski-Harabasz criterion, two clusters are created (CALIŃSKI et HARABASZ 1974). Table 7 shows that the first cluster regroups small cities with 6,878 inhabitants on average and the second cluster is made up of larger cities with an average population of 36,567. Row (3) indicates that the proportion of treated municipalities is the same in both clusters. Figure 4 represents the two clusters graphically.

Then, we use polynomial local regression with covariates selected using post-lasso to estimate the causal effect of partisanship for both small and large cities. We control for the false discovery rate with the Benjamini-Hochberg correction (BENJAMINI et HOCHBERG 1995) since we test a

TABLE 6 – Placebo cutoffs for current expenditures

	Cutoff				
	-12	-6	0	6	12
General services	12.708	17.213	-0.685	-32.667	33.336
	(36.788)	(31.319)	(25.308)	(25.079)	(25.075)
Security	5.244	3.871	-8.009	-4.011	9.082
	(6.321)	(6.763)	(6.16)	(5.135)	(6.087)
Education	1.997	-4.748	8.751	24.849**	-14.42
	(13.196)	(9.563)	(10.365)	(12.598)	(10.363)
Culture	17.396	-11.394	9.819	6.113	-3.101
	(12.848)	(9.523)	(9.906)	(12.078)	(10.693)
Sports and youth	10.003	-1.865	7.542	9.163	6.867
	(12.654)	(11.404)	(9.401)	(10.831)	(11.178)
Social and public health	13.785	-1.452	6.477	-9.837	4.051
	(9.59)	(7.24)	(6.251)	(6.863)	(7.086)
Family	6.939	-7.958	9.245	-1.491	-16.96*
	(11.274)	(9.974)	(8.41)	(10.15)	(9.432)
Housing	-5.744	2.84	0.136	-0.515	0.782
	(4.13)	(1.975)	(1.936)	(1.214)	(1.503)
Urban planning and environment	1.871	-8.727	11.043	-1.641	12.304
	(18.07)	(16.564)	(16.08)	(16.801)	(16.225)
Economic stimulus	1.183	-0.441	-5.877	1.834	0.028
	(5.353)	(5.1)	(5.128)	(5.022)	(3.234)
Total expenditures	85.501	-12.088	32.249	-13.2	45.387
	(65.684)	(63.924)	(57.202)	(60.093)	(58.068)

Notes : Estimates are calculated with a bandwidth minimising mean-squared errors and a triangular kernel (CALONICO, CATTANEO et TITIUNIK 2014). Standard deviations are in parentheses. Errors are clustered by inter-municipality.
*Significant at 10% ; **significant at 5% ; ***significant at 1%.

TABLE 7 – Cluster characteristics

	Cluster 1 ($N = 1,231$)			Cluster 2 ($N = 499$)		
	Min	Mean	Max	Min	Mean	Max
Population	3015.5	6878.01	27658.5	7644.5	36567.36	438584
		(3211.72)			(41055.92)	
Density	5.79	27.25	99.22	17.6	80.4	573.25
		(12.54)			(58.66)	
Proportion of left-wing		0.53			0.52	
municipalities		(0.5)			(0.5)	

Notes : Standard deviations are in parentheses. Columns (2) and (5) report the mean and standard deviation for each variable.

causal effect twice for each expenditure item. Thus, the results may be underestimated because multiple testing corrections can produce over-rejected tests (HSU et SHEN 2019).

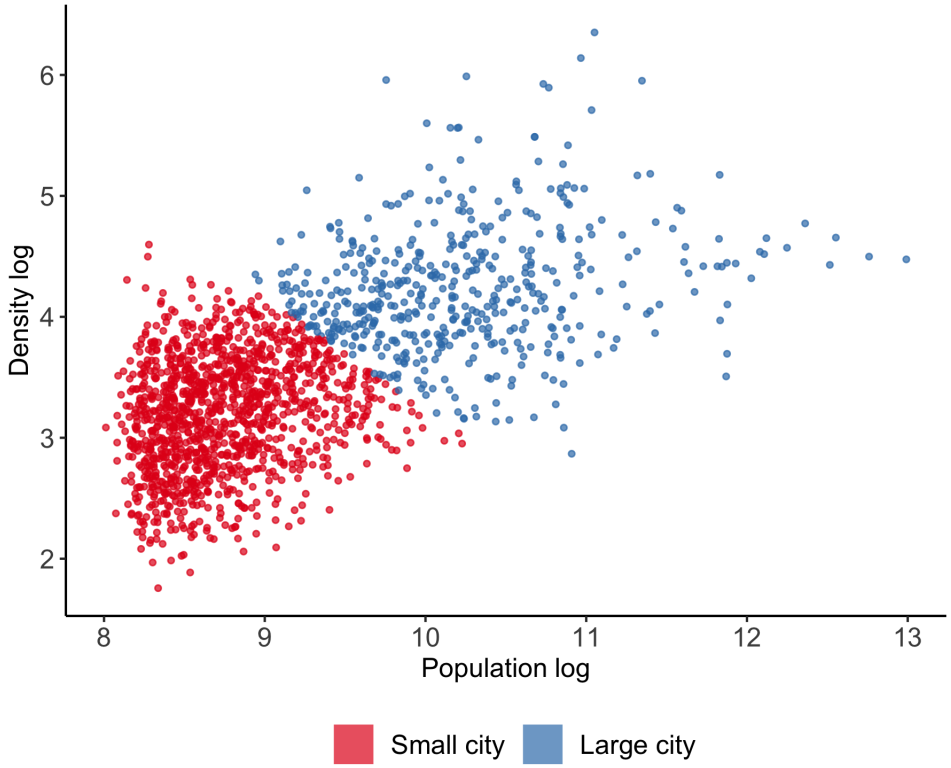

FIGURE 4 – Population and density of municipalities per cluster

4 Results

The general results indicate substantial effects of partisanship on local public expenditures. Table 8 shows that differences in budget use mainly concern capital expenditures. Column (2) includes point estimates in euros per capita and standard errors for investments in each spending item. It indicates that left-wing municipalities invest 65 euros per capita more than right-wing ones. The effect is significant at the 1% level and is considerable given the average municipal capital expenditure of 355 euros per capita (see Table 1). Leftist governments also invest 30 euros per capita more in urban planning and environment and 3.7 euros per capita more in family. On the contrary, right-wing municipalities invest 2.4 euros per capita more in security. This effect is also substantial compared to the average of 2.88 euros per capita invested by cities. Column (3) shows that security is the only area that differentiates the two political families in terms of budget allocation ; right-wing mayors allocate 0.74 percentage points more of their total investments in security. Columns (4) and (5) confirm that security is a divergence factor. Right-wing governments spend 9.4 euros more per capita and allocate 1.1 percentage points of their total current expenditures on security.

The magnitude and sign of partisanship effects on total capital expenditures are consistent with previous work (Pettersson-Lidbom (2008) ; de Benedictis-Kessner et Warshaw (2016)), as well as the results concerning security investments (Gerber et Hopkins 2011)). Compared to the existing literature, I find results with strong statistical significance. This statistical power is due to the large number of municipalities in France, which makes it an excellent field of study. It also makes it possible to study heterogeneity on population size and density.

The results for the heterogeneous effects of partisanship on local government spending show only slight differences between small and large cities. Table 9 reveals that the divergence between political families occurs primarily in capital expenditures, as is the case for the overall results without distinguishing between city size and density. The statistical significance of each spending item estimate is adjusted to account for the false discovery rate with the Benjamini-Hochberg correction. Row (2) shows that political families impact security spending in both small and large cities. Right-wing governments invest 2.2 euros more per capita and 2.5 euros more per capita in each group of municipalities. Partisanship affects current expenditures in small cities only : left-wing mayors spend 12.7 euros less on security than their right-wing conterparts. Row (11) highlights that left-wing municipalities invest about 51 euros per capita and 67 euros per capita more in small and large cities respectively. The magnitude of these results is consistent with the results shown in Table 8. In large cities, partisanship affects urban planning and environment and education, where left-wing mayors invest 40 euros per capita and 28 euros per capita more than right-wing governments. Finally, there is a positive difference of 5.3 euros per capita in family capital expenditures in small cities. In summary, there is strong evidence of partisanship effects in both small and large cities. While capital expenditures are affected in a range of areas (security, education, family, urban planning and environment), current expenditures are affected only in security and in small municipalities.

TABLE 8 – Partisanship effect on public local expenditures

	Capital expenditures		Current expenditures	
	Euros per capita	Percentage points	Euros per capita	Percentage points
General services	2.375	0.128	-5.406	0.125
	(8.9)	(2.193)	(19.492)	(1.892)
Security	-2.44***	-0.744***	-9.374*	-1.093**
	(0.854)	(0.207)	(4.99)	(0.462)
Education	8.976	-0.562	2.777	-0.406
	(6.621)	(1.828)	(8.844)	(0.798)
Culture	6.745	-0.244	6.069	0.331
	(5.573)	(1.735)	(7.941)	(0.716)
Sports and youth	-0.426	-1.968	2.693	0.122
	(8.32)	(1.943)	(7.062)	(0.64)
Social and public health	0.288	-0.239	0.906	0.181
	(2.11)	(0.543)	(4.716)	(0.459)
Family	3.69**	0.766	7.68	0.602
	(1.831)	(0.69)	(7.857)	(0.739)
Housing	0.129	-0.349	-0.093	-0.1
	(1.781)	(0.481)	(1.852)	(0.201)
Urban planning and	30.219***	4.12	7.853	0.577
environment	(11.71)	(2.76)	(12.589)	(1.204)
Economic stimulus	0.14	-0.227	-2.864	-0.205
	(2.144)	(0.525)	(3.814)	(0.243)
Total expenditures	65.48***		3.744	
	(22.455)		(28.427)	

Notes : Estimates are calculated with a bandwidth minimising mean-squared errors and a triangular kernel (CALONICO, CATTANEO et TITIUNIK 2014). Covariates selected by post-lasso are added to increase the precision of estimates. Standard deviations are in parentheses. Errors are clustered by inter-municipality.

∗Significant at 10% ; ∗∗significant at 5% ; ∗∗∗significant at 1%.

TABLE 9 –

	Small municipalities				Large municipalities			
	Capital expenditures		Current expenditures		Capital expenditures		Current expenditures	
	Euros per capita	Percentage points	Euros per capita	Percentage points	Euros per capita	Percentage points	Euros per capita	Percentage points
General services	12.61	1.884	-20.531	-0.501	-9.588	-6.141**	-2.659	-1.251
	(11.819)	(3.083)	(22.396)	(2.391)	(11.454)	(2.654)	(38.028)	(3.405)
Security	-2.24*	-0.58**	-12.702**	-1.526***	-2.479***	-1.151***	0.607	-0.627
	(1.277)	(0.277)	(5.667)	(0.507)	(0.893)	(0.33)	(10.334)	(0.962)
Education	7.114	-0.923	-3.137	-0.818	28.107**	4.071	9.118	0.986
	(7.858)	(2.277)	(9.417)	(0.971)	(13.406)	(3.138)	(14.943)	(1.271)
Culture	8.01	0.677	8.02	0.323	-1.38	-1.428	2.935	0.321
	(7.497)	(2.29)	(7.795)	(0.779)	(6.941)	(2.08)	(15.013)	(1.217)
Sports and youth	-2.988	-2.217	9.563	0.188	5.797	1.231	2.44	-0.073
	(9.599)	(2.491)	(8.326)	(0.725)	(7.013)	(1.524)	(15.29)	(1.159)
Social and public health	-2.139	-0.631	3.632	0.421	2.727	0.454	1.59	0.002
	(1.807)	(0.456)	(6.645)	(0.637)	(4.834)	(1.469)	(8.839)	(0.846)
Family	5.32**	1.194	7.346	0.601	-0.04	-1.194	-2.687	-0.923
	(2.42)	(0.874)	(8.03)	(0.812)	(2.097)	(0.84)	(14.142)	(1.164)
Housing	-1.539	-0.62	0.076	-0.137	5.61	0.588	-0.007	-0.158
	(1.757)	(0.517)	(2.494)	(0.242)	(3.685)	(0.855)	(3.742)	(0.371)
Urban planning and environment	22.393	1.393	-0.031	0.433	40.314**	5.574	12.508	0.935
	(15.25)	(3.438)	(14.835)	(1.556)	(16.617)	(3.582)	(19.192)	(1.547)
Economic stimulus	1.086	-0.026	-0.239	0.033	-0.539	-0.592	-6.065	-0.584
	(2.597)	(0.503)	(4.043)	(0.252)	(3.522)	(1.061)	(6.218)	(0.408)
Total expenditures	50.595**		10.927		66.643*		6.58	
	(25.16)		(34.281)		(39.911)		(44.469)	

Notes : Estimates are calculated with a bandwidth minimising mean-squared errors and a triangular kernel (CALONICO, CATTANEO et TITIUNIK 2014). Covariates selected by post-lasso are added to increase the precision of estimates. Significance level is corrected for false discovery rate (Benjamini-Hochberg correction). The two clusters of municipalities were constructed with k-means. Standard deviations are in parentheses. Errors are clustered by inter-municipality. *Significant at 10% ; **significant at 5% ; ***significant at 1%.

5 Discussion *Work in progress*

As stated in previous section, the average effect of partisanship on public expenditures show many similarities with the existing literature (Pettersson-Lidbom (2008) ; de Benedictis-Kessner et Warshaw (2016) ; Gerber et Hopkins (2011)) : Left-wing governments invest more than their right counterparts. This result has three main implications. First, the strong and significant differences between political parties run counter to the median voter theorem of Downs (1957), which states that candidates in an election compete for the voter with median preferences, and thus converge in ideology to win the political race. I find a divergence between political colours both in the amount of spending and the allocation of budget. The latter suggests that mayors have strong differences in preferences under budget constraints and supports the findings of (Hill et Jones 2017). Second, this results mitigates the effects of Tiebout sorting (referred to by Ferreira et Gyourko (2009), who found no partisanship effects), which predicts that individuals migrate to municipalities where their preferences are best represented (Tiebout 1956). Observing strong partisanship effects means that divergence between politicians is possible thanks to population heterogeneity in a city : Tiebout sorting is therefore not complete. Third, I show that security and urban planning and environment are the two key areas where the political colour drives differences in local spending. Expenditures at the local level are therefore highly correlated to the political debate at the national level. In the French Parliament, socialist party majorities vote 50% more laws related to environment, while right-wing party majorities vote more laws linked to public safety (Persico, Froio et Guinaudeau 2012).

Results on partisan effects heterogeneity show that left-wing governments invest more in small and large cities. However, the differences in spending are much more visible in the expenditures broken down by function for large municipalities. Therefore, the effect of political color is more structured in the latter, crystallized in security, education, and urban planning and environment, with respectively -2.5, +28, and +40 euros per inhabitant for left-wing parties. In small municipalities, Partisanship effects are less articulated around specific spending areas. While left-wing parties invest more than right-wing parties at 50.5 euros per inhabitant, the differences in expenditure by function are only in family and security, with respectively -2.2 and +5 euros per inhabitant for left-wing parties. Expenditures are thus closer to the national debate in large municipalities than in smaller ones.

Conclusion

Local government spending is a significant part of total government spending in many developed countries. In France, 60% [4] of total public capital expenditure is spent by municipalities and inter-municipalities. The existing empirical literature has produced contradictory results on the effect of partisanship on local public spending. These conflicting results may be largely induced by heterogeneity in city size and density. I use a regression discontinuity design under the continuity assumption to assess the effects of political families on capital and current expenditures of French municipalities. This study concerns cities of more than 3,500 inhabitants for the 2008-2013 period. I introduce additional covariates selected with post-lasso to increase the precision of our estimates. I show that partisanship effects on capital expenditures are substantial on average for all French cities of more than 3,500 inhabitants. In contrast, I observe only slight treatment effects on current expenditures, which concerns only security spending. Using a data-driven clustering approach, I construct a partition of French *communes* based on their population and density. Analysing the impact of political ideology on public spending in each cluster, I highlight heterogeneous treatment effects in both small and large municipalities for capital expenditures. Left-wing governments invest 50.6 euros more per capita in small municipalities, and 66.6 euros per capita more in large municipalities. In both group sizes, right-wing governments invest 2.2 to 2.5 euros more per capita in security while they spend 12.7 euros more per capita on current expenditures in small cities only. Finally, left-wing governments invest 28 euros more per capita in education and 40 euros more per capita in urban planning. Further research should investigate the heterogeneous effects of partisanship by city size and density in various countries to increase external validity.

4. French Observatory of Local Public Finance and Management (2020)

Appendices *Work in progress*

TABLE 10 – Sensitivity of political party classification

	Political party removed from estimation					
	LCOM		LDVG		LMC	
	Euros per capita	Percentage points	Euros per capita	Percentage points	Euros per capita	Percentage points
General services	1.541	-1.212	-5.779	-3.143	-0.769	-1.467
	(10.581)	(2.431)	(11.803)	(2.618)	(10.708)	(2.508)
Security	-2.317***	-0.696***	-2.172**	-0.675***	-2.503***	-0.74***
	(0.869)	(0.213)	(0.895)	(0.221)	(0.899)	(0.217)
Education	7.881	-0.481	0.047	-2.471	7.246	-0.352
	(7.342)	(1.934)	(7.278)	(2.034)	(7.384)	(1.995)
Culture	6.486	-0.398	7.304	0.124	6.005	-0.618
	(5.784)	(1.823)	(5.356)	(1.716)	(5.723)	(1.836)
Sports and youth	-0.923	-2.351	-5.893	-1.997	-2.279	-2.341
	(8.443)	(1.986)	(6.921)	(1.962)	(8.342)	(2.008)
Social and public health	0.154	-0.182	-0.361	-0.281	0.01	-0.192
	(2.277)	(0.572)	(2.019)	(0.504)	(2.288)	(0.572)
Family	2.623	0.452	5.329**	1.278	3.142	0.695
	(1.937)	(0.681)	(2.547)	(0.908)	(2.102)	(0.711)
Housing	0.128	-0.337	0.909	-0.143	0.365	-0.354
	(1.781)	(0.478)	(1.88)	(0.486)	(1.856)	(0.497)
Urban planning and environment	36.882***	5.492*	36.892**	6*	25.292*	5.938*
	(14.162)	(3.174)	(15.15)	(3.215)	(13.44)	(3.366)
Economic stimulus	0.055	-0.164	2.447	0.422	-0.214	-0.184
	(2.337)	(0.558)	(2.65)	(0.599)	(2.358)	(0.553)
Total expenditures	66.34***		53.82**		55.045**	
	(24.535)		(26.004)		(24.598)	

Notes : Estimates are calculated with a bandwidth minimising mean-squared errors and a triangular kernel (CALONICO, CATTANEO et TITIUNIK 2014). Standard deviations are in parentheses. Errors are clustered by inter-municipality.

∗Significant at 10% ; ∗∗significant at 5% ; ∗∗∗significant at 1%.

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