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Local government financing during the electoral business cycle: analysing the role of intergovernmental political alignment on municipality budgets in Greece

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Local government financing during the electoral business cycle: analysing the role of intergovernmental political alignment on municipality budgets in Greece

This paper examines the role of political alignment and the electoral business cycle on municipality revenues in Greece for the period 2003-2010. A panel dataset combining local and national elections with local budgets is used to run a fixed-effects econometric model. The findings suggest that municipalities which are politically aligned to the national government receive more funds in the run-up to elections. This is evidence of electoral considerations in the allocation of resources and calls for policy changes promoting greater fiscal decentralisation to reduce pork-barrelling and rent-seeking, as well as the dependency between the local and national government levels.

Introduction

This paper studies the existence of distributive politics in local government financing in Greece. Political considerations in the allocation of goods and services is not something novel. Under the umbrella term of distributive politics, they represent a notion that can be traced to ancient Roman times where patrons and clients would collaborate to reach mutually beneficial outcomes (Gruen, 1986). These considerations often lead to a misallocation of resources and challenge the equity, efficiency or countercyclical targets, which justify public policy intervention according to the theory of public finance (Musgrave, 1959). Whether they affect public investments, local government grants or special project transfers, these inefficiencies may translate into diminished growth and prosperity in different areas as well as growing spatial inequalities (Cutts & Webber, 2010; Johnston, 1977; Livert & Gainza, 2018).

Two opposing political economy models have been developed to reflect distributive politics. The first suggests that incumbent governments will direct resources towards "core" voters (Cox & McCubbins, 1986; Golden & Min, 2013) whilst the second argues that it is the "swing" voters (those most likely to change their previous vote) that are targeted (Dixit & Londregan, 1996; Lindbeck & Weibull, 1987). At the empirical level, these voters were largely converted to constituencies or regions that have traditionally voted for the incumbent party (core) or those that produced marginal results (swing).

Numerous studies examine distributive politics in different countries and regularly find that political or electoral considerations do play a role in the allocation of resources. See for example the studies of Livert & Gainza (2018) for Chile, Castells & Solé-Ollé (2005) for Spain, Ward & John (1999) for the UK and Case (2001) for Albania. Within this context, and considering that the country is in the spotlight over the last decade with regards to the quality of governance and the financial crisis, Greece has not received adequate attention.

This study aims at filling this gap. It examines one of the most fiscally centralised governance systems with a historic pattern of underperformance in governance indicators (Kaufmann, Kraay, & Mastruzzi, 2013) and electoral politics (Rodríguez-Pose, Psycharis, & Tselios, 2016b). The focus is on both the total municipal revenues and their disaggregation into grants, loans and own revenues. The empirical estimation uses a novel panel dataset that combines electoral results in national (parliamentary) and local elections, as well as local authority finances for the period 2003-2010. It adds new dimensions to existing studies (Lambrinidis, Psycharis, & Rovolis, 2005; Rodríguez-Pose, Psycharis, & Tselios, 2016a; 2016b) by investigating a different source of intergovernmental transfers at a more granular level than NUTS 3

regions (municipality level). Following this approach, it is possible to identify whether political considerations affected the distribution of resources from the central to the local government. To the best of our knowledge, it is the first time a paper uses this data to examine electoral politics in the allocation of funding in Greece.

The paper is structured as following. Section two reviews research on distributive politics in different countries. This is followed by an outline of the Greek case, as well as the data and methodology. Section five discusses the results of the econometric examination and is followed by the robustness checks and the conclusions. Our findings suggest that there is a significant misallocation of government grants towards politically aligned municipalities in the run-up to elections. This calls for a change in municipality financing policy and an increase of decentralisation in order to avoid the instances where local government is used as a vehicle for "pork-barrel" politics[1].

Distributive politics

Two competing models have been developed to explain distributive politics. The core voter hypothesis suggests that information asymmetry on the voting intentions of individuals means that risk-averse politicians will target resource allocation to voters they know will support them (Cox & McCubbins, 1986). Hence, in this case, funds will be channelled towards a party's core voters since it reflects a less risky investment leading to traditional machine politics. In contrast, the swing voter hypothesis suggests that voters without strong partisan alignments require less resources for politicians to secure their votes (Dixit & Londregan, 1996; Lindbeck & Weibull, 1987). Hence, investment in swing voters is more productive since it can return more voters towards the incumbent party. In addition to these propositions, theory also predicts that governments will engage in looser fiscal and monetary policies closer to elections in

order to secure re-election, leading to what is termed as the political business cycle (Golden & Min, 2013; Nordhaus, 1975; Tufte, 1980).

All these models assume that the motivation for engaging in distributive politics is securing re-election and this conclusion is supported by a range of empirical studies. Examining grant allocation to Swedish municipalities, Dahlberg and Johansson (2002) find no evidence for the core voter hypothesis captured by an alignment dummy between the municipality and the party in national government, as well as the share of votes in favour of the incumbent party. On the contrary they find evidence supporting the swing voter hypothesis, represented by the cutpoint density of the party vote distribution and the difference between the vote shares. Similar results are found by Castells and Solé-Ollé (2005) who investigate infrastructure investments in Spanish NUTS 3 regions for the period 1987-1996. The authors find statistically significant and positive results of an *electoral productivity* composite indicator, reflecting swing voter influence, voter turnout, the importance of an extra representative and the vote margins. At the same time, they do not find statistically significant results on variables capturing partisanship such as the vote share of the incumbent party in the last elections and political alignment. Hence, these results support the predictions of the Dixit & Londregan (1996) model where funding is directed towards swing voters due to the low cost of securing their votes.

Concurrently, Solé-Ollé and Sorribas-Navarro (2008) provide some contrasting results. Examining Spanish municipalities between 1993 and 2003, they identify significant and positive effects of partisan alignment on intergovernmental grants. They do not find statistically significant coefficients on the difference in the vote shares between incumbent and competitor parties whilst Livert & Gainza find evidence that public investment in Chilean municipalities was influenced by the political alignment

between local and national government levels (Livert & Gainza, 2018). These results support more the core voter hypothesis by Cox and McCubbins (1986) rather than the swing voter one. The differences between Castells & Solé-Ollé (2005) and Solé-Ollé & Sorribas-Navarro (2008) could be due to several factors such as the examination of different time periods and/or the geographical level of analysis with the former focusing on NUTS 3 regions and the latter on municipalities within them. In addition to this study, Luca and Rodríguez-Pose (2015), investigating the distribution of public investment in Turkish provinces between 2005 and 2012 find that spending was directed to supporters of the incumbent party. However, the authors also find that socioeconomic conditions have been the main determinant of these allocations, primarily directed to the most developed areas for efficiency reasons.

With regards to the electoral business cycle, again there is a range of empirical studies suggesting that spending is increased in the run up to elections. Shi and Svensson (2006) find that during 1975-1995 national fiscal deficits, as a share of the GDP, rose in pre-national election years with the result driven mainly by developing rather than developed countries. Kneebone and McKenzie (2001) examine Canadian provincial revenues between 1966 and 1997 and detect a clear electoral cycle where revenue increase through taxes is halted in pre-election years. Finally, rather than focusing on the volume of spending, Drazen and Eslava (2010) develop a model where what changes in pre-election periods, is the composition of spending, with a greater focus on expenditure in projects that allow targeting of specific segments of voters. Using data from Colombian municipalities for the period 1987-2000, they find that in pre-election years, expenditure on targetable projects increases whilst other types of spending decrease, as well as that voters respond positively to such targeting.

For all its bad reputation (Lyrintzis, 1984; Nicolacopoulos, 2005; Rodríguez-Pose et al., 2016b), Greece has been largely under-examined in this kind of literature. It was only recently that researchers investigated political considerations in the allocation of public investment and local authority fiscal autonomy. Lambrinidis et al. (2005) study the allocation of public infrastructure investments in 51 Greek NUTS 3 regions for 1982-1994 and find support for the electoral business cycle hypothesis but not pork-barrelling. Using the same geography but all public investment expenditure for the period 1974-2009, Rodríguez-Pose et al. (2016a) identify that funding was directed towards core voters when the Socialist party (PASOK) was in government and to swing constituencies when the Liberals (ND) were in office. These studies provide evidence of the political distortions in the allocation of public investment at the NUTS 3 (prefecture) level.

However, public investment is not the only channel through which the central government allocates resources to the sub-national level. Greece has a - directly elected - local government at the municipality level that sits below the NUTS 3 regional level and is largely financed by direct transfers from the central government. This is a statutory transfer that supports the functions of local government. Hence, any distortion in the allocation process creates inefficiencies that waste public funds whilst it promotes a dependency relationship (Psycharis, Zoi, & Iliopoulou, 2016) between local and central government. Finally, it offers a mechanism for incumbent parties to transfer funds to core or swing areas with greater accuracy than the constituency (prefectural) level. This stream of funding from the central to local government has been relatively unexplored across different countries for a number of reasons such as the difficulty in obtaining electoral and budget data at this level; the lack of concurrent local elections

across the country and; fiscally decentralised systems that make these intergovernmental transfers less relevant.

This paper focuses on this gap in the literature by examining political considerations in the central government's grant allocations to municipalities. In doing so, it utilises a novel dataset that combines local government financial accounts with national and local election data and uses panel data econometrics. Prior to the presentation of these results, an analysis of the relationship between the local and national government in Greece is provided, together with descriptive statistics on the data to be used.

The Greek case

Before the econometric investigation, it is worth contextualising the Greek case since it reflects a system of governance which does not apply universally. After a 30-year long period of post-war instability, what was coined the third Greek Republic has been established in the mid-1970s with 'enhanced' proportional representation (i.e. a party can come to government with less than 50% of the votes). At the national level, Greek politics have retained past practices of clientelism and populism, but at the same time, they attempted to modernise the country with significant milestones including the country's accession to the EU and its institutions (i.e. Common Market, EMU etc.) (Lyrintzis, 2005; Nicolacopoulos, 2005).

Within this context, local governance had a central role to play both in terms of service provision and in targeting goods to particular segments of constituencies. By being closer to the voter, the local government level benefits from increased information on local needs and can assist the more efficient provision of public goods and services. Simultaneously, its ties to the national government and the national party system, render

it a useful tool for targeting these goods and services for electoral reasons instead of equity or efficiency ones.

The study focuses on what came to be known as the 'Kapodistrias' local government structure that involved the division of Greece into 1,034 municipalities led by directly elected mayors (Chorianopoulos, 2012). Financing local government in this period is largely influenced by the Central Autonomous Funds (KAP) (introduced in the late 1980s by law 1828/1989) that required that shares of several taxes such as income and value added tax, are ring-fenced to fund local government (Psycharis et al., 2016).

Data and Research Design

Data

The data used for the investigation of political considerations in the allocation of funding from the state to municipalities, combines electoral results (at both the state and local government level) with budget information at the municipal level for the period 2003-2010. Three parliamentary elections (2004, 2007 and 2009) and two local elections (2006 and 2010) were held during this period. This data is supplemented by local authority fiscal data, outlining municipality revenues and their breakdown into own revenues, grants and loans.

National and local elections

The local and parliamentary elections' dataset[2], reports the political affiliation of the winners in the parliamentary and local elections. The data on mayors, predominantly cover the most populous municipalities. As a result, several local authorities are classed as "not-affiliated" because there is no affiliation information, in most of the cases, due to the small size of the municipality.

FIGURE 1 ABOUT HERE

Figure 1 shows the number of affiliated (dark grey bars) and non-affiliated (light grey bars) municipalities in 2003, grouped by size (x-axis). The dots (solid for affiliated and hollow for non-affiliated) show the corresponding population (in millions, captured by the right y-axis). In 2003, 822 municipalities are not-affiliated of which, 65% (535) had at that time populations below 5,000 inhabitants and 96% (790) below 10,000. Concurrently, the 199 municipalities with affiliation information account for 7.17 million citizens (about 2/3rds of the total population of Greece at that time) and correspond to more than 2/3rds of the total local budget of all municipalities[3].

FIGURE 2 ABOUT HERE

Figure 2 shows the electoral timeline and the number of aligned and non-aligned mayors with the national government during the period 2003-2010. Not-affiliated municipalities are omitted from this analysis due to lack of information on municipalities' affiliation. In the parliamentary elections of 2004 and 2009, the opposition party won and the government changed during the respective calendar year; since the focus of this study is the local budget that is approved in the parliament at the end of each calendar year, we consider that the budget follows the affiliation of the incumbent government at the end of each last calendar year and the beginning of each current year (i.e. PASOK (the socialist party) for 2004 and ND (liberals) for 2009). For the remaining years, the active incumbent party is considered the full controller of the government budget each year. Consequently, in the period between 2005 and 2009 (blue part of the timeline), ND is considered the incumbent party and therefore mayors originating or supported by ND are consider aligned (blue bar). In the same period, non-

aligned mayors supported either by PASOK (green (dashed) part of the two-coloured bar) or any other smaller opposition party (yellow (light and striped) part of the two-coloured bar). Accordingly for the years 2003, 2004 and 2010 when PASOK was governing (green part of the timeline), aligned mayors were those originating or supported by PASOK (green (dashed) colour bar) and non-aligned, those supported by either ND (blue part of the two-coloured bar) or any other small opposition party (yellow (light and striped) part of the two-coloured bar). As can be seen below the variables of interest will be based on the data above, and will capture the effect of political alignment and the electoral business cycle on municipality funding.

Municipality finances

The local budget dataset[4] contains analytical information on the revenues (regular and extraordinary) of all municipalities, annually for the period 2003-2010. On the left part of figure 3 we show the share of each revenue subcategory (as defined by the Hellenic Statistical Authority) over the total local budget (pooled data from all municipalities and all periods). In the outer ring of the pie chart we group these subcategories into three principal revenue categories which, together with total revenues, are the dependent variables of the analysis: grants, own revenues and loans[5].

FIGURE 3 ABOUT HERE

On the right-hand side we show the annual data of these three revenue groups together with the total annual revenues (in billion €) of all (pooled) municipalities. There are eight actual data points (one for each year) that are connected with a line to highlight the overall trend. The data is also projected to the electoral time line which is also approximating the dates of the parliamentary and local elections. At first glance, we

can observe that government grants are the principal source of municipality revenues (58.3% of the total budget), higher than the own revenues (36.1%).

The intergovernmental grants to municipalities involve transfers (regular or extraordinary) for operational and investment costs. The majority of this funding comes from the KAP based on a formula and several distribution criteria[6]. The final formula is decided annually by the Ministers of Internal Affairs, Finance (and Economy if funding is intended for investment) after suggestions from the union of local government representatives (K.E.D.K.E.) and potentially allows for some discretionary behaviour. Similarly, but at a smaller scale, municipal loans (5.6% of the total) are an additional source of funding that is dependent on central budget and decision making. Laws 2503/1997 and 3463/2006, allow municipalities to independently[7] apply and obtain a loan from a national financial institution by using part of KAP or other special grants assigned to their budget for its repayment or guarantee.

On the other hand, own revenues is a more autonomous source of income for the municipalities. They are mostly derived from user fees, charges and taxes which have been established and defined by the central government, following specific conditions on their level and increases. Local authorities are fully responsible for their collection and therefore can enjoy some degree of freedom. Own revenues is the mechanism that allows mayors to take initiatives and acquire additional funds to either replace reduced grants or to meet municipal needs without (to some extent) the central government's approval. In contrast with government grants and loans, increasing own revenues could bear political costs for local authorities if they are to come by raising additional taxes, fees and penalties.

Method and model

Given the large differences in municipality size (μ=10691.37, S.D.=30522.77), the data

on local revenues is highly skewed towards larger local authorities. In order to correct for skewness towards larger municipalities, we attempt two basic transformations on the dependent variables (total revenues, grants, loans and own revenues); we analyse either their natural logarithm (*log_Total, log_Grants, log_RevOwn and log_Debt*), or their ratio to total revenues (*Grants Dependency, Revenue Autonomy* and *Debt Dependency*).

While the logarithmic transformation is a standard corrective approach, commonly used in similar studies (e.g. Rodríguez-Pose et al. (2016b)), the ratio to the total has only been used to approximate fiscal decentralisation (Psycharis et al., 2016). Here, total revenues are used to normalise each variable under investigation (e.g. own revenues) in order to perform a between-municipalities comparison (aligned vs. non-aligned), as well as providing evidence of municipality dependency on specific types of income (grants, own, loans). Following Psycharis et. al (2016), the ratio of own revenues to the total is named *Revenue Autonomy* to signal the degree to which municipality finances are independent of central government decision making. Accordingly, the ratios of government grants and loans to the total revenues are called *Grants Dependency* and *Debt Dependency* to reflect how dependent local government finances are on revenues that are not within their control. Such a normalisation is superior to per-capita transformations since it accounts not only for several within-municipality heterogeneity (e.g. population, geographical characteristics, etc.) but also for intertemporal effects or shocks that could disproportionately affected municipalities (e.g. financial crisis, political shocks, Olympic Games etc.).

Under the electoral politics prism in Greece, the main hypothesis is that aligned municipalities enjoy preferential treatment from the government with respect to financing. It is expected that this favourable treatment will be more intense in the run-up to elections due to vote-seeking behaviours either by the incumbent party in central

government or by mayoral candidates. Our main hypothesis can then be sub-categorised as follows (for both transformations τ: log or ratio to total):

- A. Aligned municipalities receive more grants than non-aligned ones;

- B. Aligned municipalities receive more loans than non-aligned ones;

- C. Aligned municipalities raise equal or less own revenues than non-aligned ones;

- D. If all the above hypotheses hold, then total revenues will be significantly higher for aligned municipalities compared to non-aligned ones.

As a result, the dependent variables will be analysed in two main dimensions; namely, the municipalities' political alignment and time (*year*). The political alignment will be captured by variable:

- *aligned*: a dummy variable taking value 1 when a mayor's political affiliation matches the national government's one and 0 otherwise.

 In order to analyse the time dimension, two new variables are generated as follows:

- *pre_parl:* a dummy variable indicating the period prior to parliamentary elections. It takes value 1 for the years 2003 and 2007 and 0 for the rest.

- *pre_local:* a dummy variable accounting for the period before local elections held in 2006. It takes value 1 for this year and 0 for the rest.

Since the parliamentary elections were held during the first quarter of 2004 (March, 7) and the second half of 2007 (September, 16) (figure 2), it was considered appropriate to use 2003 and 2007 as the pre-election years. Assuming that the budgets are determined at the beginning of the year, an incumbent government could not expect to significantly impact the election results by pork-barrelling in three months (as is the

case for the 2004 national election) whilst this would be possible in nine months (as in the case of the 2007 election). In addition, *pre_parl* does not account for the 2009 parliamentary elections (October, 4). This is because these elections were not planned (next ones expected to be in 2011) and were called for in September 2009 and with the national economy about to enter its long-lasting debt crisis. As a result, even if pork-barrelling was an option, the incumbent party would not have the time to target funding to specific municipalities. In a similar vein, 2010 has been excluded from *pre_local*. During this year, the country was already facing the financial crisis which had a significant impact on the level of government transfers to municipalities (figure 3). As a result, funding for pork-barrel politics would be expected to be significantly diminished. Two robustness checks are being performed (appendices 2 and 4) in order to test these two assumptions and largely confirm the results.

The variables of interest are the revenues of aligned municipalities during the pre-electoral years. For this reason the following two interactions are examined:

- ***aligned_pre_parl*:** a dummy variable taking value 1 if both *aligned* and *pre_parl* are equal to 1, and 0 otherwise.

- ***aligned_pre_local*:** a dummy variable taking value 1 if both *aligned* and *pre_local* are equal to 1, and 0 otherwise.

A panel, fixed-effects econometric model is used to account for unobserved heterogeneity[8]. It controls for all time-invariant differences between municipalities (aligned vs. non-aligned), so that the estimated coefficients cannot be biased because of omitted time-invariant characteristics. We also use regionally clustered robust standard errors to allow for intragroup correlation at the level of prefecture (the observations are independent across prefectures but not necessarily within prefectures).

The main independent variables are complemented by controls for the following time-variant characteristics: a) *gover*, a dummy variable to control whether different political parties have followed different policies with regards to local authority financing (i.e. focus on own revenues vs focus on grants) when they were in power; b) *gdp_cap*, a continuous variable indicating the GDP/capita of the prefecture[9] in which a municipality belongs. This variable aims to control for the efficiency vs equity nexus on the distribution of public resources. Considering GDP/capita as a proxy for more (or less) economically successful areas, this variable could indicate whether government grants are directed to more efficient areas or places with greater need; c) *liberal_party* and d) *other_party*, two dummies indicating the specific affiliation of the mayor, using *socialist_party* as a reference group; e) *yr2004*, f) *yr2005*, g) *yr2009* and h) *yr2010*, four year dummies controlling for the corresponding year and using *yr2008* as reference group (variables *pre_parl* and *pre_local* already account for years 2003, 2006 and 2007). 2008 is selected as a reference year since there was not any substantial political (e.g. elections) or economic (e.g. crisis, Olympic Games) shock taking place. For the same reasons, 2005 could also be used as a reference group (see appendix 1 for robustness check).

Equation (1) describes the main empirical model (including interactions) of our analysis:

$$
\begin{aligned}
Rev_{it} = {} & \beta_1 aligned_{it} + \beta_2 pre\_parl_{it} + \beta_3 aligned_{it} * pre\_parl_{it} + \beta_4 pre\_local_{it} \\
& + \beta_5 aligned_{it} * pre\_local_{it} + \beta_6 gover_t + \beta_7 gdp\_cap_{it} \\
& + \beta_8 liberal\_party_{it} + \beta_9 other\_party_{it} + \beta_{10} yr2004_t + \beta_{11} yr2005_t \\
& + \beta_{12} yr2009_t + \beta_{13} yr2010_t + \alpha_i + \varepsilon_{it} \ (eq.1)
\end{aligned}
$$

Where

- Rev$_{it}$ is the dependent variable (*log_Total, log_Grants, log_OwnRev, log_Loans, Grants Dependency, Revenue Autonomy,* or *Debt Dependency*), where i=municipality and t=time.

- β$_{(1-13)}$ are the coefficients of the explanatory and control variables

- α$_i$ (i=1….n) is the unknown intercept for each municipality

- ε$_{it}$ is the error term

Results

Table 1 reports the coefficients and corresponding standard errors (in parentheses) of the regressors for the models with dependent variables *Log_Grants* (A), *Log_Loans*[10] (B), *Log_OwnRev* (C) and *Log_Total* (D). Models A-D also correspond to the four hypotheses. The difference between models subscripted with "1" and "2" is that the latter include the interaction terms *aligned_pre_parl* and *aligned_pre_local*.

The coefficients of *pre_parl and pre_local* are, in many cases significant, indicating that the years before elections have a statistically significant difference in funding compared to the reference year (2008). A comparison between table 1 and the robustness check using 2005 as the reference year (appendix 1) suggests that the sign and size of these coefficients is influenced by the choice of the reference year.

Table 1 about here

The main interest of the study is on the interactions *aligned_pre_parl* and *aligned_pre_local* which represent aligned municipalities in the run-up to national and local elections respectively. The coefficient of *aligned_pre_parl* is significant and positive in models A$_2$ and D$_2$ increasing grants and total revenues by 13% and 9.7% respectively. Aligned municipalities receive on average about €1.3m more grants and €1.9m more total revenues than non-aligned municipalities in the *pre_parl* periods.

Similarly, the statistically significant coefficient for *aligned_pre_local* in A_2 suggests that aligned municipalities also receive more grants (6.2% or €0.6m on average) than non-aligned ones in the run-up to local elections.

With regards to specification B_2, the statistically significant coefficient β_3 should be treated with caution. The large number of zero values for *log_Loans* (see note 10) means that the size of the coefficient is inflated. Further investigation in appendix 3 shows the results of a logistic regression (fixed-effects) using the dependent dummy variable *D_Loans* (taking the value 1 if loans>0, 0 otherwise). We find that in *pre_parl* periods, the probability of an aligned municipality to obtain a loan is 92% higher than the one of a non-aligned one.

- Result 1: In the run-up to national elections, aligned municipalities receive more grants (A) and have greater probability in obtaining loans (B) than non-aligned municipalities. At the same time, there is no difference in own revenues (C). As a consequence, aligned municipalities obtain more total revenues (D) than non-aligned ones.

- Result 2: In the run-up to local elections, aligned municipalities receive more grants (A).

Attempting to explain why total revenues are not affected in pre-local elections periods, our attention is directed towards own revenues. Whilst in pre-national election periods, municipality own revenues appear to be positive, during pre-local election periods they turn negative, suggesting a substitution effect between grants and own revenues in the run-up to local elections. This could explain why total revenues are significantly different before national elections but not before local ones. However, it should be noted that the lack of statistical significance for the relevant coefficients in C_2 means

that the above arguments are more speculative rather than supported by econometric evidence.

The control variables also provide interesting results. Variable *gover* which controls whether different political parties in the national government have pursued different policies with regards to municipality financing, suggests that one party focused more on grants and the other more on loans. Own revenues were not affected by either party. The coefficients for *gdp_cap* suggest that municipalities in prefectures with higher GDP/capita generate more own revenues and hence are more autonomous but they do not receive more grants or loans. It is probable that this reflects the limitations of using GDP/capita at the prefecture level to proxy growth levels in different municipalities rather than the lack of equity or efficiency arguments in distributing government grants.

The analysis of table 1 is repeated in table 2 using *Grants Dependency, Debt Dependency* and *Revenue Autonomy* as the dependent variables which are the ratios of grants, loans and own revenues to the total revenues. The findings on the effect of *aligned_pre_parl* and *aligned_pre_local* on grants are confirmed. In the run-up to national and local elections, aligned municipalities show statistically significant differences from non-aligned ones in the proportion of grants to their total revenues. In particular, the coefficient of *aligned_pre_parl* in A_4 suggests that in pre-election (parliamentary) years, the share of grants to the total revenues is 1.34% higher for aligned municipalities. Similarly, the coefficients for *aligned_pre_local* in A_4 and B_4 point to an increase of 1.84% in the share of grants to the total revenues and of 1.46% in the share of loans to the total.

These results confirm that the increase observed at the logarithmic transformation is significant even in terms of proportionality, meaning that it is not just

that aligned municipalities receive more grants in pre-election periods, but also that these are disproportionately increased against other revenues, thus increasing the dependency of aligned municipalities on government grants and loans. Moreover, the share of loans to the total revenues for aligned municipalities is 1.53% higher than the corresponding one for non-aligned municipalities, irrespectively of the period under examination. Finally, with regards to the *Revenue Autonomy*, the negative and significant coefficients of *aligned* (C_3), *aligned_pre_parl* and *aligned_pre_local* (C_4) mirror the results on specifications A_3-B_4 and their effect on total revenues (*Grants Dependency + Debt Dependency + Revenue Autonomy = 1*) and similarly, the decreasing autonomy of municipalities.

Table 2 about here

Robustness checks

Several robustness checks have been carried out to test the validity of the results. These involve changing the reference year to 2005, as well as including 2010 in *pre_local* and 2009 in *pre_parl*. The outcomes of the robustness checks largely confirm the results of the main analysis, lending credence to the hypothesis that political considerations do affect the allocation of intergovernmental grants.

Using 2005 as a reference year (appendix 1) instead of 2008 has virtually no effect on the main results. The coefficients and statistical significance of *aligned_pre_parl* and *aligned_pre_local* remain the same whilst the only difference observed is that the coefficients for *pre_parl* and *pre_local* change sign. As discussed earlier, this was expected considering the trajectory of total revenues in time and their components.

Appendix 2 shows the regression results for when year 2010 is included in *pre_local*. The main results exclude this year from the pre-local election period and dummies since the year was a crisis one which has impacted negatively on government grants (figure 3). Including it in *pre_local*, does not affect the results for *aligned_pre_parl* which still suggest that aligned municipalities received more grants and had more total revenues in pre-national election periods. Its inclusion affects mainly the results on *aligned_pre_local* which loses the statistical significance of its coefficient in A_2, together with the one for *aligned_pre_parl* in B_2. We consider the reason for this to be the significant reduction in the size of government funding during the recession, which would also affect any attempt to assist aligned candidates in the run-up to local elections.

Finally, in appendix 4, year 2009 is excluded from the year fixed effects and included in *pre_parl*. The 2009 elections were not planned and only declared a month in advance. Consequently, the decision was made not to include it as a pre-election year since there would be no opportunity for electoral politics. Testing for the effect of including 2009 in *pre_parl*, does not significantly change the results of *aligned_pre_parl* and *aligned_pre_local*.

Conclusions

Greece is a country that suffered for many years from lack of government efficiency related to electoral politics. However, it was not until recently that studies started to shed light on the nature of the allocation of resources from the Greek state to prefectures and whether these were subject to political considerations (Rodríguez-Pose et al., 2016a, 2016b). This paper has focused on a different channel of government grants, the state funding to municipalities. Municipalities are significantly smaller than prefectures and hence allow better targeting of funding for electoral reasons.

With a rich panel dataset combining 8 years (2003-2010) of municipality funding and election results, and by employing a range of econometric methods to address heterogeneity in the nature of the study and the data itself (see for example the 0 values of loans and the use of regionally clustered robust standard errors), the paper finds evidence that electoral politics played a role in the distribution of government grants to municipalities. In particular, the results suggest that aligned municipalities receive approximately 13% more grants and have 9.7% more total revenues in the run-up to national elections. On average, these figures correspond to €1.3m more grants and €1.9m more total revenues respectively. Concurrently, aligned municipalities show increased grant receipts (6.2%, €0.6m on average) compared to non-aligned ones during pre-local election years. Most of these results are confirmed by a range of robustness checks and provide evidence of both pork-barrelling and the electoral business cycle hypotheses.

This significant misallocation of resources can impede long term economic growth and has strong implications for policy. First and foremost, the need to reduce pork-barrel politics calls for the greater empowerment of local government in raising their own revenues. With regards to the central government, the size of the government transfers allows for their misuse for electoral gains whilst it can create a rent-seeking environment where local authorities compete for providing the best (electoral) services to the incumbent party rather than the populations they represent. Secondly, being dependent on government transfers is detrimental to an environment that needs more local innovation in public service reform, with new ways of generating income and more efficient delivery of public services. As a result, minimising local government dependency on the state can achieve multiple benefits by reducing the opportunities for pork-barrelling and improving innovation and efficiency at the local level.

Finally, the paper opens new avenues for further research. Using the available dataset, one avenue could be examining other potential considerations such as voter turnover etc. or specific accounts to find whether pork-barrelling takes place on certain types of revenues such as 'extraordinary grants for investment' for example. In addition, further research could test the effectiveness of this misallocation of resources by examining the electoral results in aligned and non-aligned municipalities.

Notes

1 According to OECD data, central government grants continue to dominate local government revenues up to 2016 which is the latest year of available data at the time of writing.

2 Source: Greek Ministry of Internal Affairs. This was chosen as the most reliable source of information with sample sizes ranging from 1,001 municipalities in 2010 to 1,033 in 2007-2009 out of a total of 1,034.

3 Data from 2006 local elections (not shown here) yielded similar results in respect to affiliation frequency and population; about 169 municipalities containing 6.81 million citizens were reported in Ministry's website as affiliated.

4 Source: Hellenic Statistical Authority for 2003-2009 and the Ministry of Internal Affairs for 2010.

5 Revenue sub-categories (and the corresponding code used by Hellenic Statistical Authority) OWN REVENUES: Income from (01) Fixed assets, (02) Current assets, (03) User fees and rights, (04) User fees and Services, (05) Taxes, (07) Other regular revenues, (11) the sale of fixed and current assets, (14) sponsorships, charities and heritages, (15) Penalties and fines, (16) Other extraordinary Revenues, (21) Regular and (22) Extraordinary revenues from past years; GRANTS: (06) Regular Grants for operational expenses, Extraordinary Grants for (12) operational expenses, (13) for Investment; LOANS: (3) loans.

6 The criteria of apportionment consider population, accessibility and inequality characteristics such as: a) length of water and sewage pipes, b) length and accessibility of road network, c) whether it is a mountainous, lowland or island municipality, d) the existing level of social services, e) the capacity to generate own revenues, f) population and its seasonal variations and trends, g) the average weather conditions and number of school classes and h) the environmental conditions.

7 Due process in obtaining a loan (the procedure followed, as well as that the amount borrowed is within limits) is guaranteed by the regional administrator (government appointed role for 2003-2010) and an independent auditing body.

8 Hausman test confirmed the prevalence of the fixed-effects over a random-effects model by rejecting the hypothesis that the unique errors (ui) are not correlated with the regressors. No multicollinearity has been detected in the choice of the independent variables. The only Tolerance value lower than 10%, is the one of gdp_cap which does not affect any of the results.

9 Source: Eurostat. To the best of the authors' knowledge, socio-economic indicators are unavailable for Greece for 2003-2010 below the NUTS3 level except from the Census carried out once every 10 years (and hence not offering variation in time). Prefectures are the government level immediately above the municipality level. They are NUTS3 regions and there are 51, covering the Greek territory.

10 Since the sample has many municipalities (especially after 2004) with no (or negative) loans on their budget and the natural logarithm of zero is not defined, we substitute these zero values with "1" for not losing those observations. This problem doesn't exist when using the ratios in table 2.

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Supplemental Material - Appendices

Appendix 1: Change of reference year

Table S1 about here

Appendix 2: Adding 2010 in pre_local

Table S2 about here

Appendix 3: Logistic Regressions on D_Loans.

Table S3 about here

Appendix 4: Adding 2009 in pre_parl

Table S4 about here

Tables

Table1: Fixed-effects Panel Data Analysis of Municipal Revenues (log).

	(A₁) log_Grants	(A₂) log_Grants	(B₁) log_Loans	(B₂) log_Loans	(C₁) log_OwnRev	(C₂) log_OwnRev	(D₁) log_Total	(D₂) log_Total
aligned	-0.00918	-0.0468*	0.298	-0.0412	-0.0327	-0.0317	0.00251	-0.0220
	(0.0243)	(0.0270)	(0.281)	(0.285)	(0.0327)	(0.0323)	(0.0254)	(0.0266)
pre_parl	-0.103***	-0.169***	0.826	0.253	-0.0392*	-0.0603***	-0.0589**	-0.109***
	(0.0181)	(0.0250)	(0.638)	(0.658)	(0.0200)	(0.0219)	(0.0256)	(0.0347)
aligned_pre_parl		0.121***		1.058**		0.0393		0.0925***
		(0.0307)		(0.499)		(0.0322)		(0.0313)
pre_local	-0.145***	-0.174***	0.613	0.319	-0.00246	0.0360	-0.109***	-0.116***
	(0.0333)	(0.0305)	(0.748)	(0.809)	(0.0561)	(0.0696)	(0.0384)	(0.0425)
aligned_pre_local		0.0604**		0.616		-0.0814		0.0139
		(0.0273)		(0.762)		(0.0527)		(0.0321)
gover	0.305***	0.293***	-6.130***	-6.227***	-0.124	-0.131	0.186***	0.176***
	(0.0698)	(0.0703)	(1.111)	(1.106)	(0.0952)	(0.0973)	(0.0631)	(0.0647)
gdp_cap	-0.00782	-0.00734	0.134	0.139	0.0461***	0.0463***	0.00450	0.00492
	(0.00974)	(0.00969)	(0.190)	(0.190)	(0.0123)	(0.0123)	(0.00845)	(0.00830)
liberal_party	0.0151	0.0170	-0.581	-0.573	-0.0123	-0.00284	-0.00967	-0.00543
	(0.0244)	(0.0254)	(0.561)	(0.585)	(0.0288)	(0.0317)	(0.0193)	(0.0211)
other_party	-0.0550	-0.0535	0.261	0.273	-0.0607	-0.0587	-0.0773**	-0.0757**
	(0.0497)	(0.0488)	(1.419)	(1.428)	(0.0496)	(0.0510)	(0.0362)	(0.0361)
yr2004	-0.216***	-0.217***	7.431***	7.416***	0.154	0.156	-0.0783	-0.0783
	(0.0720)	(0.0715)	(0.895)	(0.888)	(0.0958)	(0.0965)	(0.0656)	(0.0655)
yr2005	-0.299***	-0.301***	1.019	1.004	0.0291	0.0319	-0.204***	-0.204***
	(0.0426)	(0.0418)	(0.949)	(0.942)	(0.0734)	(0.0739)	(0.0483)	(0.0479)
yr2009	0.240***	0.240***	-0.289	-0.287	-0.000306	-0.000184	0.136***	0.136***
	(0.0215)	(0.0215)	(0.625)	(0.625)	(0.0430)	(0.0431)	(0.0266)	(0.0266)
yr2010	0.134**	0.117*	-7.077***	-7.225***	-0.120**	-0.127**	0.0483	0.0350
	(0.0572)	(0.0595)	(1.278)	(1.275)	(0.0486)	(0.0494)	(0.0490)	(0.0517)
Constant	15.73***	15.75***	9.613***	9.799***	14.45***	14.44***	16.15***	16.16***
	(0.160)	(0.157)	(3.037)	(3.033)	(0.196)	(0.194)	(0.152)	(0.149)
Observations	1469	1469	1469	1469	1469	1469	1469	1469
N_g	214	214	214	214	214	214	214	214
sigma_e	0.287	0.286	5.512	5.511	0.357	0.357	0.270	0.269
sigma_u	0.761	0.761	3.213	3.220	0.928	0.928	0.785	0.785
rho	0.875	0.876	0.254	0.254	0.871	0.871	0.894	0.895

The logarithmic transformation of municipal grants (A₁, A₂), loans (B₁, B₂), own revenues (C₁, C₂) and total revenues (D₁, D₂) are the dependent variables of the fixed-effects models (allowing for intragroup correlation at the prefecture level). The dummy variables *aligned* (=1 if municipality's and central government's affiliation are the same), *pre_parl* and *pre_local* (=1 for the years before the parliamentary (2003, 2007) and local (2006) elections respectively) and their interactions *aligned_pre_parl* and *aligned_pre_local* (in A₂, B₂, C₂ and D₂) are the main explanatory variables. We control for government affiliation (*gover*), prefecture GDP/capita (*gdp_cap*), municipality affiliation (*liberal_party, other_party*) and year effects (*yr2004, yr2005, yr2009, yr2010*). We denote p-values by * p<0.10, ** p<0.05, *** p<0.01 and report standard errors in parentheses. Standard deviation of residuals within municipalities and of the overall term in each model are denoted with σu and σe respectively, with ρ= σ²u+(σ²u+σ²e) capturing the variance due to difference across panels.

Table2: Fixed-effects Panel Data Analysis of Municipal Revenues (Ratio to total).

	(A₃) Grants Dependency	(A₄) Grants Dependency	(B₃) Debt Dependency	(B₄) Debt Dependency	(C₃) Revenue Autonomy	(C₄) Revenue Autonomy
aligned	-0.00269	-0.00838*	0.0153***	0.0119**	-0.0126***	-0.00349
	(0.00414)	(0.00494)	(0.00474)	(0.00591)	(0.00449)	(0.00535)
pre_parl	-0.0246***	-0.0318***	0.0233*	0.0199	0.00129	0.0119*
	(0.00806)	(0.0102)	(0.0121)	(0.0155)	(0.00518)	(0.00659)
aligned_pre_parl		0.0134**		0.00616		-0.0196***
		(0.00527)		(0.0101)		(0.00688)
pre_local	-0.0264***	-0.0351***	0.00507	-0.00185	0.0213***	0.0370***
	(0.00972)	(0.0112)	(0.0108)	(0.0124)	(0.00615)	(0.00896)
aligned_pre_local		0.0184*		0.0146*		-0.0330***
		(0.0106)		(0.00853)		(0.0109)
gover	0.0928***	0.0920***	-0.0226	-0.0228	-0.0702***	-0.0691***
	(0.0138)	(0.0136)	(0.0162)	(0.0163)	(0.0130)	(0.0131)
gdp_cap	-0.0118***	-0.0118***	0.00288	0.00289	0.00896***	0.00891***
	(0.00261)	(0.00261)	(0.00224)	(0.00222)	(0.00175)	(0.00174)
liberal_party	0.0105	0.00968	-0.0145	-0.0136	0.00311	0.00484
	(0.00779)	(0.00786)	(0.00843)	(0.00869)	(0.00886)	(0.00930)
other_party	0.0108	0.0108	-0.0121	-0.0122	0.00130	0.00140
	(0.0198)	(0.0198)	(0.0210)	(0.0209)	(0.0171)	(0.0170)
Constant	0.756***	0.760***	0.00159	0.00397	0.242***	0.236***
	(0.0475)	(0.0478)	(0.0424)	(0.0430)	(0.0241)	(0.0235)
Year FE	YES	YES	YES	YES	YES	YES
Observations	1469	1469	1469	1469	1469	1469
N_g	214	214	214	214	214	214
sigma_e	0.0653	0.0653	0.0702	0.0702	0.0568	0.0564
sigma_u	0.116	0.116	0.0371	0.0370	0.119	0.119
rho	0.760	0.761	0.218	0.218	0.814	0.816

The ratios of the municipal grants (A₃, A₄), loans (B₃, B₄) and own revenues (C₃, C₄) to the total revenues are the dependent variables of the fixed-effects models (allowing for intragroup correlation in the prefecture level). The independent variables are the same as table 1. Coefficients of the control variables are omitted for facilitating illustration. We denote p-values by * $p<0.10$, ** $p<0.05$, *** $p<0.01$ and report standard errors in parentheses. σ_u, σ_e and ρ same as table 1.

TableS1: Fixed-effects Panel Data analysis on Municipalities' Revenues (log) with 2005 as a reference year.

	(A$_1$) log_Grants	(A$_2$) log_Grants	(B$_1$) log_Loans	(B$_2$) log_Loans	(C$_1$) log_OwnRev	(C$_2$) log_OwnRev	(D$_1$) log_Total	(D$_2$) log_Total
aligned	-0.00918	-0.0468*	0.298	-0.0412	-0.0327	-0.0317	0.00251	-0.0220
	(0.0243)	(0.0270)	(0.281)	(0.285)	(0.0327)	(0.0323)	(0.0254)	(0.0266)
pre_parl	0.196***	0.132***	-0.193	-0.751	-0.0682	-0.0923	0.145***	0.0951**
	(0.0334)	(0.0425)	(0.763)	(0.788)	(0.0574)	(0.0698)	(0.0344)	(0.0443)
aligned_pre_parl		0.121***		1.058**		0.0393		0.0925***
		(0.0307)		(0.499)		(0.0322)		(0.0313)
pre_local	0.154***	0.127***	-0.406	-0.685	-0.0315	0.00403	0.0948***	0.0880***
	(0.0220)	(0.0288)	(0.562)	(0.731)	(0.0241)	(0.0353)	(0.0164)	(0.0236)
aligned_pre_local		0.0604**		0.616		-0.0814		0.0139
		(0.0273)		(0.762)		(0.0527)		(0.0321)
gover	0.305***	0.293***	-6.130***	-6.227***	-0.124	-0.131	0.186***	0.176***
	(0.0698)	(0.0703)	(1.111)	(1.106)	(0.0952)	(0.0973)	(0.0631)	(0.0647)
gdp_cap	-0.00782	-0.00734	0.134	0.139	0.0461***	0.0463***	0.00450	0.00492
	(0.00974)	(0.00969)	(0.190)	(0.190)	(0.0123)	(0.0123)	(0.00845)	(0.00830)
liberal_party	0.0151	0.0170	-0.581	-0.573	-0.0123	-0.00284	-0.00967	-0.00543
	(0.0244)	(0.0254)	(0.561)	(0.585)	(0.0288)	(0.0317)	(0.0193)	(0.0211)
other_party	-0.0550	-0.0535	0.261	0.273	-0.0607	-0.0587	-0.0773**	-0.0757**
	(0.0497)	(0.0488)	(1.419)	(1.428)	(0.0496)	(0.0510)	(0.0362)	(0.0361)
yr2004	0.0835**	0.0835**	6.412***	6.412***	0.124**	0.125**	0.126***	0.126***
	(0.0395)	(0.0396)	(0.579)	(0.581)	(0.0520)	(0.0521)	(0.0371)	(0.0373)
yr2008	0.299***	0.301***	-1.019	-1.004	-0.0291	-0.0319	0.204***	0.204***
	(0.0426)	(0.0418)	(0.949)	(0.942)	(0.0734)	(0.0739)	(0.0483)	(0.0479)
yr2009	0.539***	0.541***	-1.308	-1.291	-0.0294	-0.0321	0.340***	0.340***
	(0.0375)	(0.0368)	(0.848)	(0.850)	(0.0496)	(0.0493)	(0.0399)	(0.0392)
yr2010	0.433***	0.418***	-8.096***	-8.229***	-0.149	-0.159	0.252***	0.239***
	(0.0875)	(0.0886)	(1.623)	(1.621)	(0.107)	(0.110)	(0.0730)	(0.0750)
Constant	15.43***	15.45***	10.63***	10.80***	14.48***	14.47***	15.94***	15.95***
	(0.122)	(0.120)	(2.640)	(2.651)	(0.146)	(0.143)	(0.113)	(0.111)
Observations	1469	1469	1469	1469	1469	1469	1469	1469
N_g	214	214	214	214	214	214	214	214
sigma_e	0.287	0.286	5.512	5.511	0.357	0.357	0.270	0.269
sigma_u	0.761	0.761	3.213	3.220	0.928	0.928	0.785	0.785
rho	0.875	0.876	0.254	0.254	0.871	0.871	0.894	0.895

The logarithmic transformation of municipal grants (A$_1$, A$_2$), loans (B$_1$, B$_2$), own revenues (C$_1$, C$_2$) and total revenues (D$_1$, D$_2$) are the dependent variables of the fixed-effects models (allowing for intragroup correlation in the prefecture level). The dummy variables *aligned* (=1 if municipality's and central government's affiliation are the same), *pre_parl* and *pre_local* (=1 for the years before the parliamentary (2003, 2007) and local (2006) elections respectively) and their interactions *aligned_pre_parl* and *aligned_pre_local* (in A$_2$, B$_2$, C$_2$ and D$_2$) are the main explanatory variables. We control for government affiliation (*gover*), prefecture GDP per Capita (*gdp_cap*), municipality affiliation (*liberal_party, other_party*) and year effects (*yr2004, yr2008, yr2009, yr2010*). We denote p-values by * p<0.10, ** p<0.05, *** p<0.01 and report standard errors in parentheses. Standard deviation of residuals within municipalities and of the overall term in each model are denoted with σu and σe respectively, with ρ= σ^2$_u$ +(σ^2$_u$+ σ^2$_e$) capturing the variance due to difference across panels.

TableS2: Fixed-effects Panel Data analysis on Municipalities' Revenues (log) with 2010 in pre_local and 2008 as a reference year.

	(A₁) log_Grants	(A₂) log_Grants	(B₁) log_Loans	(B₂) log_Loans	(C₁) log_OwnRev	(C₂) log_OwnRev	(D₁) log_Total	(D₂) log_Total
aligned	-0.00660	-0.0233	0.227	-0.172	-0.0338	-0.0194	0.00396	0.000185
	(0.0245)	(0.0238)	(0.288)	(0.375)	(0.0324)	(0.0337)	(0.0254)	(0.0250)
pre_parl	-0.115***	-0.178***	1.157**	0.728	-0.0341	-0.0466**	-0.0657**	-0.111***
	(0.0219)	(0.0267)	(0.541)	(0.604)	(0.0222)	(0.0214)	(0.0285)	(0.0358)
aligned_pre_parl		0.119***		0.792		0.0244		0.0852***
		(0.0241)		(0.534)		(0.0247)		(0.0264)
pre_local	-0.0521**	-0.0389*	-1.948***	-2.297**	-0.0417	-0.0123	-0.0568*	-0.0351
	(0.0223)	(0.0216)	(0.695)	(0.900)	(0.0334)	(0.0461)	(0.0299)	(0.0299)
aligned_pre_local		-0.0426		0.686		-0.0681		-0.0576
		(0.0395)		(0.814)		(0.0514)		(0.0345)
gover	0.112***	0.112***	-0.829*	-0.853*	-0.0426	-0.0414	0.0775**	0.0777**
	(0.0414)	(0.0415)	(0.448)	(0.456)	(0.0526)	(0.0528)	(0.0383)	(0.0385)
gdp_cap	0.0194***	0.0180**	-0.616***	-0.619***	0.0345***	0.0338***	0.0199***	0.0187***
	(0.00662)	(0.00688)	(0.129)	(0.129)	(0.00808)	(0.00827)	(0.00606)	(0.00620)
liberal_party	0.0148	0.0184	-0.572	-0.470	-0.0121	-0.0162	-0.00985	-0.00946
	(0.0270)	(0.0274)	(0.547)	(0.549)	(0.0287)	(0.0285)	(0.0209)	(0.0210)
other_party	-0.0803	-0.0775	0.958	1.002	-0.0500	-0.0509	-0.0916**	-0.0903**
	(0.0550)	(0.0539)	(1.282)	(1.278)	(0.0488)	(0.0500)	(0.0412)	(0.0415)
yr2004	-0.0979*	-0.104*	4.180***	4.132***	0.104	0.103	-0.0117	-0.0160
	(0.0574)	(0.0574)	(0.543)	(0.543)	(0.0676)	(0.0674)	(0.0513)	(0.0512)
yr2005	-0.193***	-0.198***	-1.913***	-1.959***	-0.0159	-0.0165	-0.144***	-0.148***
	(0.0316)	(0.0313)	(0.700)	(0.703)	(0.0446)	(0.0438)	(0.0398)	(0.0392)
yr2009	0.251***	0.250***	-0.603	-0.604	-0.00512	-0.00541	0.142***	0.142***
	(0.0198)	(0.0198)	(0.631)	(0.632)	(0.0408)	(0.0407)	(0.0256)	(0.0255)
Constant	15.34***	15.37***	20.52***	20.76***	14.61***	14.62***	15.92***	15.95***
	(0.123)	(0.125)	(2.611)	(2.581)	(0.134)	(0.135)	(0.123)	(0.125)
Observations	1469	1469	1469	1469	1469	1469	1469	1469
N_g	214	214	214	214	214	214	214	214
sigma_e	0.289	0.288	5.596	5.597	0.358	0.358	0.270	0.269
sigma_u	0.746	0.748	4.779	4.787	0.948	0.950	0.764	0.767
rho	0.869	0.871	0.422	0.422	0.875	0.876	0.889	0.890

The logarithmic transformation of municipal grants (A₁, A₂), loans (B₁, B₂), own revenues (C₁, C₂) and total revenues (D₁, D₂) are the dependent variables of the fixed effects models (allowing for intragroup correlation in the prefecture level). The dummy variables *aligned* (=1 if municipality's and central government's affiliation are the same), *pre_parl* and *pre_local* (=1 for the years before the parliamentary (2003, 2007) and local (2006, 2010) elections respectively) and their interactions *aligned_pre_parl* and *aligned_pre_local* (in A₂, B₂, C₂ and D₂) are the main explanatory variables. We control for government affiliation (*gover*), prefecture GDP per Capita (*gdp_cap*), municipality affiliation (*liberal_party, other_party*) and year effects (*yr2004, yr2005, yr2009*). We denote p-values by * p<0.10, ** p<0.05, *** p<0.01 and report standard errors in parentheses. Standard deviation of residuals within municipalities and of the overall term in each model are denoted with σu and σe respectively, with ρ= σ²ᵤ +(σ²ᵤ+ σ²ₑ) capturing the variance due to difference across panels.

TableS3: Fixed-effects Logit Regressions on Loans.

	(B₃) D_Loans	(B₄) D_Loans
aligned	0.0559	-0.0743
	(0.181)	(0.199)
pre_parl	0.231	-0.120
	(0.254)	(0.322)
aligned_pre_parl		0.654*
		(0.369)
pre_local	0.314	0.286
	(0.322)	(0.384)
aligned_pre_local		0.0801
		(0.415)
gover	-3.626***	-3.747***
	(0.616)	(0.621)
gdp_cap	0.0331	0.0401
	(0.0996)	(0.0999)
liberal_party	-0.0143	-0.0154
	(0.280)	(0.289)
other_party	0.139	0.118
	(0.545)	(0.545)
yr2004	4.422***	4.474***
	(0.643)	(0.649)
yr2005	0.423	0.443
	(0.439)	(0.441)
yr2009	-0.133	-0.131
	(0.245)	(0.247)
yr2010	-3.988***	-4.119***
	(0.575)	(0.581)
Observations	1338	1338
N_g	190	190

The dichotomous variable *D_Loans* (=1 if loans>0, 0 otherwise) is the dependent variable (allowing for intragroup correlation in the prefecture level). The dummy variables *aligned* (=1 if municipality's and central government's affiliation are the same), *pre_parl* and *pre_local* (=1 for the years before the parliamentary (2003, 2007) and local (2006) elections respectively) and their interactions *aligned_pre_parl* and *aligned_pre_local* are the main explanatory variables. We control for government affiliation (*gover*), prefecture GDP/capita (*gdp_cap*), municipality affiliation (*liberal_party, other_party*) and year effects (*yr2004, yr2005, yr2009 yr2010*). We denote p-values by * p<0.10, ** p<0.05, *** p<0.01 and report standard errors in parentheses.

TableS4: Fixed-effects Panel Data Analysis of Municipal Revenues (log) considering year 2009 as pre-electoral (parliamentary) year.

	(A₁) log_Grants	(A₂) log_Grants	(B₁) log_Loans	(B₂) log_Loans	(C₁) log_OwnRev	(C₂) log_OwnRev	(D₁) log_Total	(D₂) log_Total
aligned	-0.00815	-0.0488*	0.295	-0.154	-0.0326	-0.0242	0.00309	-0.0222
	(0.0244)	(0.0272)	(0.281)	(0.362)	(0.0327)	(0.0360)	(0.0255)	(0.0288)
pre_parl	0.0740***	0.0223	0.250	-0.322	-0.0191	-0.0234	0.0416*	0.00453
	(0.0170)	(0.0196)	(0.539)	(0.593)	(0.0292)	(0.0321)	(0.0213)	(0.0266)
aligned_pre_parl		0.0957***		1.060**		0.00811		0.0687***
		(0.0211)		(0.512)		(0.0179)		(0.0211)
pre_local	-0.125***	-0.160***	0.547	0.159	-0.000172	0.0397	-0.0977**	-0.109**
	(0.0361)	(0.0326)	(0.734)	(0.779)	(0.0573)	(0.0728)	(0.0405)	(0.0451)
aligned_pre_local		0.0730***		0.801		-0.0844		0.0222
		(0.0264)		(0.748)		(0.0550)		(0.0325)
gover	0.431***	0.423***	-6.542***	-6.635***	-0.110	-0.113	0.258***	0.251***
	(0.0712)	(0.0705)	(1.070)	(1.074)	(0.0923)	(0.0926)	(0.0628)	(0.0628)
gdp_cap	0.00160	0.00224	0.104	0.111	0.0471***	0.0473***	0.00986	0.0104
	(0.0102)	(0.0101)	(0.193)	(0.195)	(0.0123)	(0.0123)	(0.00887)	(0.00869)
liberal_party	0.0141	0.00289	-0.578	-0.701	-0.0124	-0.00542	-0.0103	-0.0156
	(0.0246)	(0.0247)	(0.561)	(0.579)	(0.0288)	(0.0311)	(0.0195)	(0.0205)
other_party	-0.0588	-0.0638	0.273	0.217	-0.0611	-0.0602	-0.0794**	-0.0826**
	(0.0485)	(0.0483)	(1.421)	(1.431)	(0.0497)	(0.0506)	(0.0361)	(0.0374)
yr2004	-0.177**	-0.179**	7.306***	7.284***	0.158	0.161	-0.0564	-0.0568
	(0.0767)	(0.0761)	(0.894)	(0.888)	(0.0970)	(0.0976)	(0.0675)	(0.0674)
yr2005	-0.265***	-0.267***	0.907	0.884	0.0330	0.0358	-0.184***	-0.185***
	(0.0471)	(0.0461)	(0.921)	(0.913)	(0.0753)	(0.0759)	(0.0522)	(0.0518)
yr2010	0.274***	0.260***	-7.533***	-7.692***	-0.104*	-0.107**	0.128***	0.117**
	(0.0511)	(0.0517)	(1.251)	(1.254)	(0.0521)	(0.0521)	(0.0434)	(0.0446)
Constant	15.40***	15.43***	10.68***	10.94***	14.41***	14.40***	15.96***	15.97***
	(0.169)	(0.165)	(3.000)	(3.029)	(0.196)	(0.196)	(0.153)	(0.151)
Observations	1469	1469	1469	1469	1469	1469	1469	1469
N_g	214	214	214	214	214	214	214	214
sigma_e	0.300	0.300	5.518	5.516	0.357	0.357	0.274	0.274
sigma_u	0.751	0.752	3.201	3.213	0.926	0.926	0.776	0.776
rho	0.862	0.863	0.252	0.253	0.870	0.870	0.889	0.889

The logarithmic transformation of municipal grants (A₁, A₂), loans (B₁, B₂), own revenues (C₁, C₂) and total revenues (D₁, D₂) are the dependent variables of the fixed-effects models (allowing for intragroup correlation in the prefecture level). The dummy variables *aligned* (=1 if municipality's and central government's affiliation are the same), *pre_parl* and *pre_local* (=1 for the years before the parliamentary (2003, 2007, 2009) and local (2006) elections respectively) and their interactions *aligned_pre_parl* and *aligned_pre_local* (in A₂, B₂, C₂ and D₂) are the main explanatory variables. We control for government affiliation (*gover*), prefecture GDP per Capita (*gdp_cap*), municipality affiliation (*liberal_party, other_party*) and year effects (*yr2004, yr2005, yr2010*). We denote p-values by * p<0.10, ** p<0.05, *** p<0.01 and report standard errors in parentheses. Standard deviation of residuals within municipalities and of the overall term in each model are denoted with σu and σe respectively, with ρ= σ²ᵤ +(σ²ᵤ+ σ²ₑ) capturing the variance due to difference across panels.
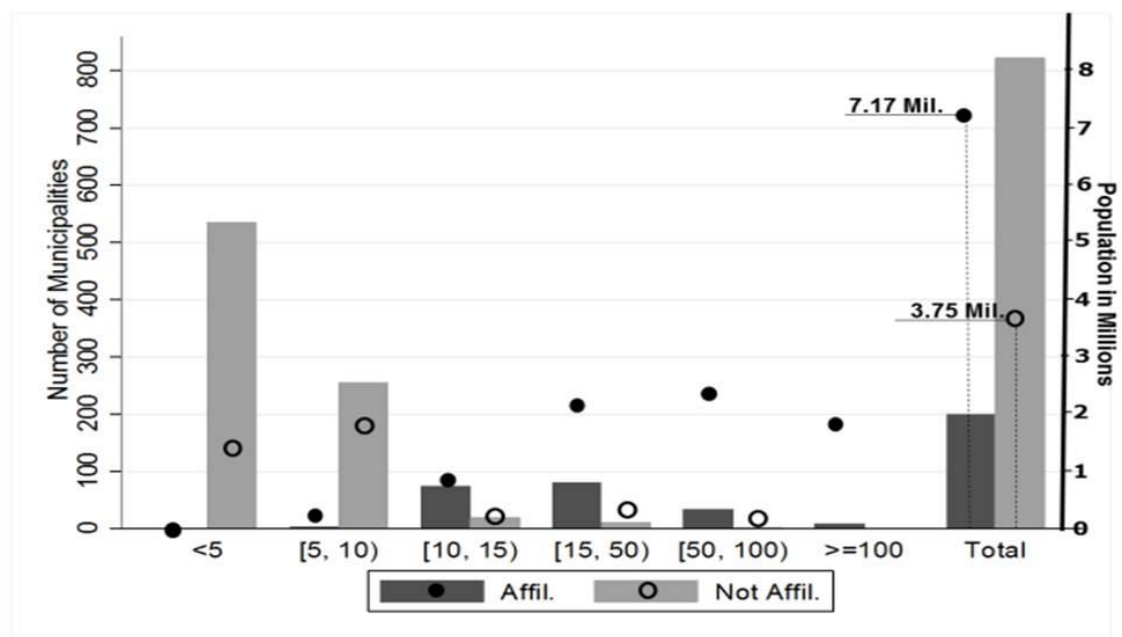
Figure Captions

Figure 1: Number and population of municipalities by affiliation and size ('000s) in 2003
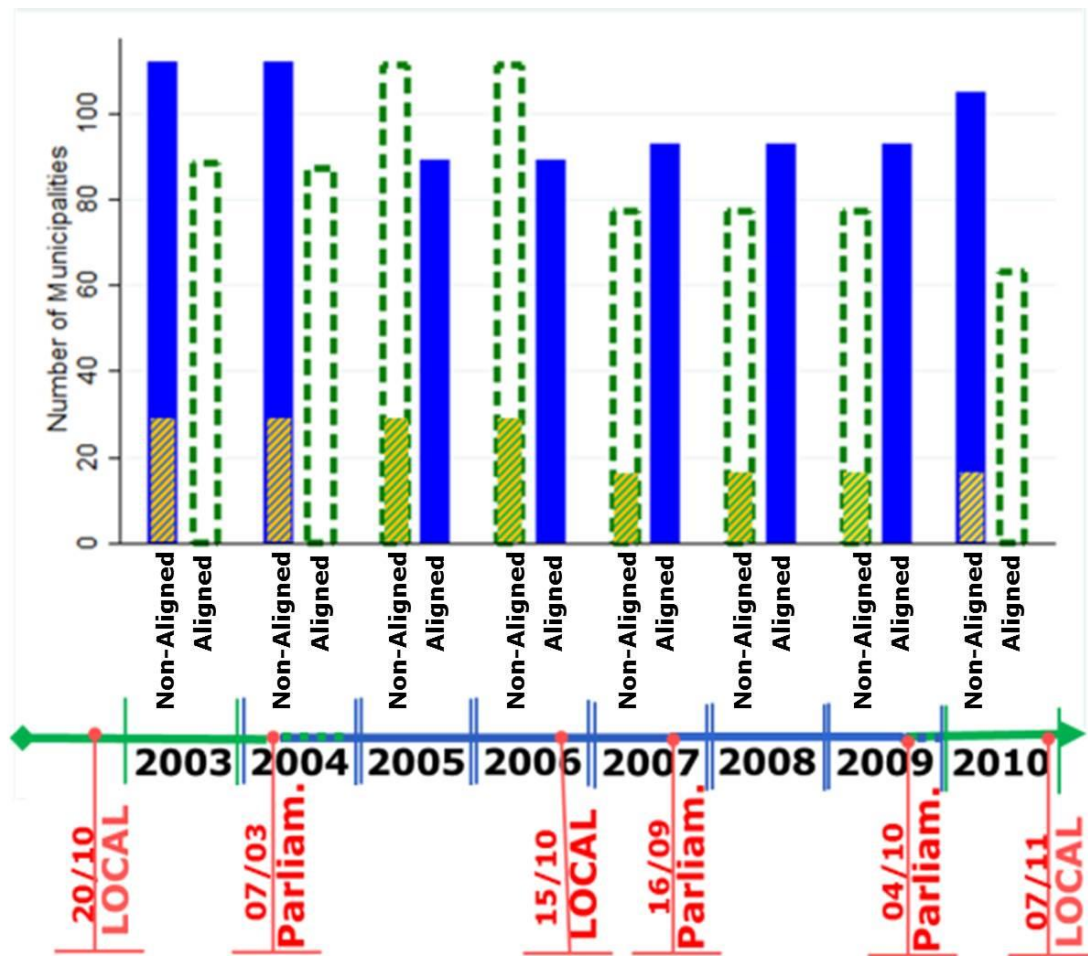
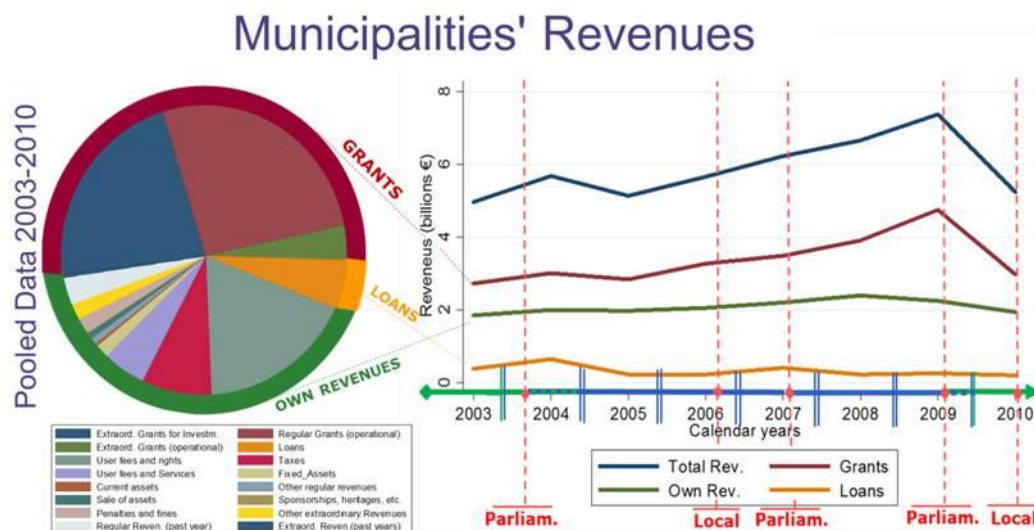Figure 2: Number of municipalities by alignment across the electoral time line

Figure 3: (left) Share of each subcategory of the local budget (pooled data from all municipalities and all periods). In the outer ring of the pie chart we group these

subcategories into tree principal revenues' categories: grants (RED), own revenues (GREEN) and loans (ORANGE). (right) Total annual municipal revenues and the 3 principal categories for the period 2003-2010, projected on the electoral timeline (green (light) when PASOK and blue (dark) when ND in government), with the red lines indicating the election dates.