ELECTORAL INCENTIVES TO OBTAIN EU GRANTS

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ABSTRACT. Political agency models predict that electoral concerns induce politicians to put effort into making policies that benefit citizens. We exploit the introduction of mayoral term limits in Portugal to investigate how electoral incentives affect mayors' efforts to obtain EU grants. We focus on EU grants because getting them requires effort. Moreover, by obtaining EU grants, mayors can do more for their citizens. We focus on Portugal because it provides a quasi-natural experimental setting to determine the causal effect of electoral incentives on effort. We find that term-limited mayors receive about 30% less EU money than mayors eligible for reelection.

Keywords: Political Agency, Effort, Term limits, EU grants.

JEL codes: D72, H77, K16.

Date: August 19, 2024.

We are grateful to Frank Bohn, Chi-Young Choi, Josse Delfgaauw, Robert Dur, Aksel Erbahar, Laura Hering, Mariana Lopes da Fonseca, Rubén Poblete Cazenave, Miguel Portela, Dana Sisak, Odd Straume, Lotte Swank, Dinand Webbink, Jeffrey Wooldridge and the participants at an Economics Seminar of the University of Victoria (Canada), at the 16th Conference of the Portuguese Economic Journal, and the 79th Annual Conference of the International Institute of Public Finance for constructive comments. The National Funds of the FCT funded this work – Portuguese Foundation for Science and Technology within the project UIDB/03182/2020. Contact information: Francisco José Veiga (fjveiga@eeg.uminho.pt) University of Minho & NIPE, Braga; Linda Gonçalves Veiga (linda@eeg.uminho.pt) University of Minho & NIPE, Braga; Otto Swank (swank@ese.eur.nl), Erasmus School of Economics, Rotterdam. Declarations of interests: none.

1. Introduction

People's preferences vary widely for many public policies. This creates a well-known function of elections. Elections enable citizens to express their preferences and allow politicians to respond to people's conflicting desires. Downsian models highlight that electoral concerns induce politicians to choose policies that please middle-of-the-road voters (Downs, 1957). For other public policies, citizens have more common interests. This creates another function of elections, which is complementary to the first. Elections enable people to incentivize politicians to promote the general interest. Political agency models show how voters can incentivize incumbent politicians to put effort into policies that promote the general interest (Barro, 1973; Ferejohn, 1986).

Though the Downsian and political-agency models focus on different functions of elections, it is often hard to discriminate empirically between them. Almost thirty years ago, Besley and Case (1995) used term limits to test the main predictions of political agency models. Term limits define who are and who are not eligible to stand for reelection. Term-limited politicians are thought to have weaker electoral concerns than politicians who can be reelected. Besley and Case (1995) found that term-limited U.S. governors "reduce the effort expended to keep taxes and expenditures down" (see Besley and Case, 1995, p. 781). They regarded their findings as supportive of political-agency models. However, their findings are also consistent with the predictions of models in the Downsian tradition. Alesina (1987) shows that in a setting with two ideological parties, elections may lead to policy convergence [see also Calvert (1985)]. Also, in Alesina's model, term-limited incumbents may choose more ideological policies. Strikingly, in Besley and Case (1995), the term-limit effect was mainly caused by Democratic Governors raising taxes in their last term. Likewise, in Lopes da Fonseca (2020), right-wing term-limited mayors tend to pursue more conservative policies. In these cases, term-limited incumbents possibly did not reduce effort but had weaker incentives to please middle-of-the-road voters, as Downsian models predict.

Ideally, to test if electoral concerns incentivize politicians to exert effort, we need a political activity that (1) requires an incumbent's effort and (2) benefits all citizens. This paper investigates how term limits affect Portuguese mayors' incentives to obtain grants funded by the European Union (EU). We focus on EU grants because getting them requires substantial effort. To obtain grants, a municipality must monitor calls, seek collaboration, and prepare grant proposals. Receiving grants relaxes a municipality's budget constraint significantly. From 1998 to 2022, it formed, on average, 8.8% of municipality revenues in Portugal. By obtaining EU grants, a mayor can do more for her citizens without raising taxes. As a result, citizens' preferences regarding EU grants are relatively homogeneous.[1] Section 3 provides further background on EU grants. Hence, EU grants satisfy the two requirements for testing the central prediction of political agency models. Obtaining them requires substantial effort and benefits all citizens.[2]

Our analysis focuses on *Portugal* because it introduced mayoral term limits, which became binding in the 2013 municipal elections. This institutional change provides a quasi-natural experimental setting, constituting an ideal testing ground to analyze the effects of electoral incentives to obtain EU grants. It allows us to use a difference-in-differences approach across different groups of mayors before and after the reform. Most existing empirical studies on the impact of electoral concerns on public finance compare the policies of term-limited politicians with those of non-term-limited

[1]EU grants finance a wide variety of projects. Two types of projects stand out. Among the Portugal 2020 projects, 231 were concerned with creating pedestrian and cycling paths and 178 were concerned with wastewater treatment plant construction. These projects have the features of a public good.

[2]Previous studies have investigated the allocation of national transfers to municipalities [see, for example, Brollo and Nannicini (2012)]. These studies typically find that political alignment influences the allocation of these grants. Due to this, the allocation of national transfers is less appropriate for testing the main predictions of political accountability models. Political alignments between the EU and Portuguese municipalities seem far less strong.

politicians. Our DiD approach allows for a causal interpretation of the estimated effects.

To determine the causal effects of term limits on the EU grants municipalities received, we employ a dynamic Two-Way Fixed Effects (TWFE) model. Our sample covers six municipal elections, three terms before term limits become binding, and three terms (or cohorts) after term limits become binding. The estimates reveal that, on average, mayors not eligible for reelection obtain about 30% less EU funding. As, on average, EU grants form 8.8% of a municipality's revenues, 30% less funding means that, on average, a municipality's budget is 2.64% lower when its mayor is not eligible for reelection.

Since our study covers multiple treatment timings, we cannot rule out heterogeneous treatment effects. To detect possible heterogeneous treatment effects, we present event-study plots for each cohort separately. The plots for the three cohorts display similar patterns. We also use recently developed DiD estimators that account for heterogeneous treatment effects.[3] These estimators confirm our results.

Our paper is closely related to De Janvry et al. (2012), who show that term-limited mayors have weaker incentives to implement a national program to reduce school dropouts in Brazilian municipalities. Their study focuses on a policy that requires effort. Moreover, the program was fully funded by the national government. Thus, their application satisfies the conditions mentioned above for testing the political agency model. Unlike us, De Janvry et al. (2012) could not use a DiD model to estimate the effect of electoral concerns on program performance because term limits were always present in their setting. Also for Brazil, Ferraz and Finan (2011) shows that term-limited mayors are more corrupt than those eligible for reelection. Their study focuses on how electoral concerns discourage bad practices, while our study focuses on how electoral concerns encourage good practices. Finally, Aidt and Shvets (2012) examines how electoral incentives induce legislators to bring more pork to

[3]For surveys of this recent literature see de Chaisemartin and D'Haultfœuille (2023) and Roth et al. (2023).

their districts. Their study also focuses on the effects of electoral concerns on politicians' efforts. However, in Aidt and Shvets (2012), society suffers from these efforts.

2. Background: EU grants

The EU provides financial support through a wide variety of programs.[4] In Portugal, EU funds have been used to finance investment projects across practically all municipal intervention areas, including transportation, sewage, water supply, educational infrastructure, and housing (urban rehabilitation).[5] The European Regional Development Fund (ERDF) and the Cohesion Fund (CF) are Portuguese municipalities' most relevant funding sources. The main objective of these programs is to reduce regional inequalities and foster sustainable development. EU funds contribute significantly to public investment.[6] In Portugal, EU cohesion funds formed 84% of government capital investment in 2017, the highest percentage among EU member states (EC, 2017). Furthermore, for the 1995-2023 period, Portuguese municipalities, on average, accounted for 45% of total public investment.

EU funding generally follows a shared management model, wherein the EU establishes priorities and strategic pillars, and member states define national strategic

[4]Since joining the European Economic Community in 1986, Portugal benefited from seven programming cycles, five of which are covered in the paper: The Community Support Framework (1994-99), the Community Support Framework (2000-06), the National Strategic Reference Framework (2007-13), Portugal 2020 (2014-20), and most recently, Next Generation EU (2021-22) and Portugal 2030 (2021-29). The total allocation for the Portugal 2020 programming cycle was 26.89 billion euros.

[5]To illustrate, Table 1 of the Online Appendix provides data on the projects funded under the Portugal 2020 programming cycle, categorized on thematic objectives. Table 2 lists the investment priorities of the three main thematic objectives, and shows that many projects concern adopting measures to improve the urban environment (837 projects), developing educational and training infrastructures (686 projects), and investing in the water sector (416 projects).

[6]Cohesion policy is the EU's main investment policy, accounting for 8,5% of government capital investment across the EU from 2015 to 2017 (EC, 2017).

objectives and thematic domains. The Agency for Development and Cohesion handles the overall technical coordination of the European structural and investment funds in Portugal. The allocation of European funds to municipalities or other entities typically occurs through competitive calls to thematic or regional operational programs. Municipal project applications must satisfy selection criteria specific to the call. Typically, the technical managing authority for the program assesses applications, oversees project selection, and ensures that the spending aligns with EU and national priorities. Technical managing authorities regularly undergo audits by both national and EU entities.

Two features of EU funding procedures are essential for estimating the effect of term limits on mayors' efforts to acquire EU funds. First, acquiring EU grants requires effort, but effort does not guarantee the acquisition of grants.[7] Preparing EU grant proposals involves a series of complex steps, from identifying suitable funding opportunities to preparing a detailed and convincing proposal. Municipalities must demonstrate how their projects align with the EU's objectives and priorities, and provide solid evidence of their capacity to deliver. Collaboration between different departments and consultation with external experts is often required to meet all requirements and criteria. Additionally, careful preparation of budgets and detailed timetables are essential, as is the ability to anticipate and mitigate risks. Our data shows how much EU money municipalities receive per year.[8] We are aware that this is only an imperfect measure of effort. Our measure does not include mayors' efforts that eventually did not lead to the acquisition of EU grants. Our empirical strategy

[7]During the 2014-2020 programming cycle (Portugal 2020), the approval rate for *accepted* applications stood at 66% (AD&C, 2023).

[8]Although the dataset used to construct Tables 1 and 2 of the Online Appendix contains data on the total funding approved for each project, it does not indicate how much was transferred each year. Additionally, since only the project leader is indicated, it is not possible to know if there were partner institutions and how much funding they received. Due to these caveats of project data, we use municipal accounts data in our estimations (see Section 5.1).

relies on the assumption that the efforts mayors put into acquiring grants are closely related to the amount of EU money received.

Second, EU funding procedures take time. There are two main lags between a mayor's efforts to obtain EU funding and the actual transfer of EU money: the proposal lag, which is the time between a mayor's efforts and the EU's funding decision, and the implementation and transfer lag, which encompasses the time between the EU's funding decision and the actual transfer of funds to the municipality, including the project implementation phase. Due to these lags, there is no one-to-one relationship between receiving EU money and the mayor in office. We allow for time lags in our event-study estimations by including two years after treatment ends.

To form an idea about the length of these delays, we collected data on the projects funded under the PT2020 framework (2014-20) with mainland municipalities as project leaders (see Table 1 of the Online Appendix). For the proposal lag, we found that most calls remain open for several months (usually 3 or 4), and most decisions are announced 30 to 60 working days (1.5 to 3 months) after the closure of a call. Regarding implementation and transfer lags, the 4,269 projects led by municipalities in mainland Portugal had an average duration of 1,046 days, nearly 3 years, with a median of 897 days and a standard deviation of 668.8 days. Notice that these lags do not account for the lags between approval decisions and projects' starting dates.

3. Background: Portuguese Municipalities

On the mainland of Portugal, municipalities are the second-highest level of government, just below the central government. There are 278 municipalities.[9] Each municipality has two elected bodies: the Town Council and the Municipal Assembly.

[9]There are 308 municipalities in Portugal, 278 on the mainland, and 30 on the archipelagos of Madeira (11) and Azores (19). Municipalities in the islands can obtain grants from their regional governments and are entitled to ultra-periphery grants by the EU, which are unavailable to mainland municipalities. Therefore, to assure full comparability across municipalities, only the 278 located on Portugal's mainland are included in the sample used in the empirical analysis.

Voters cast separate ballots for the Town Council lists and the Municipal Assembly lists. The leading candidate on the list that receives the most votes in the Town Council election becomes the mayor. The campaigns of Town Council elections mainly revolve around the mayoral candidates. The mayor presides over the Town Council and is regarded by citizens as the municipality's most prominent politician.[10]

Municipal elections are held every four years. Until 2001, they took place in December. They occurred in the subsequent elections in October or late September (2005, 2009, 2013, 2017, and 2021).[11] Before the 2013 local elections, there were no constraints on the number of consecutive terms a mayor could serve. Due to this, many mayors were reelected, resulting in prolonged tenures in office. In 2013, 31 mayors had held their positions for over two decades. In 2005, Law 46/2005 was enacted to enhance mayoral turnover, imposing a limit of three successive terms. However, as a transitory measure permitted all mayors to seek re-election in 2009, the law only came into effect during the 2013 elections. In the 2013 elections, 149 of the 278 mayors were ineligible for re-election in the (mainland) municipalities. The number of term-limited mayors was smaller in the following two local elections, with 38 not eligible for re-election in 2017 and 46 in 2021.

Table A.1 in the Appendix presents data on municipalities' revenues. More than half of their revenues come from the national government or the EU. On average, European grants constitute 8.8% of municipalities' effective revenues and are mostly capital (96%). National grants to municipalities are predominantly formula-determined. How much formula-determined budget a municipality receives depends on its population, geographic characteristics, and fiscal capacity. By definition, the allocation of formula grants to municipalities does not depend on mayors' efforts. Consequently, formula grants form an excellent candidate for placebo falsification.

[10]The council's proposals require the approval of the Municipal Assembly.

[11]The first municipal elections after the restoration of democracy in 1974 took place in December 1976. Subsequent elections were held every three years until December 1985, and every four years thereafter.

4. HYPOTHESES

Theoretical studies on political agency employ principal-agent models with the electorate (voters) as the principal and the politician (mayor) as the agent. In the context of our application, the key feature of the principal-agent model is that voters want their mayor to exert effort to obtain EU grants. As effort is costly, the mayor must be motivated. To provide incentives, voters coordinate on a voting rule that stipulates that if the municipality acquired sufficient EU grants, they reelect their mayor with a higher probability.

Obviously, voters can only incentivize their mayor to apply for EU grants if their mayor is eligible for reelection. This is why the introduction of binding term limits in 2013 in Portugal changed mayors' incentives. This brings us to our central hypothesis:

Hypothesis 1. *The introduction of term limits causes term-limited mayors to receive fewer EU grants than mayors eligible for reelection.*

Hypothesis 1 presents the main prediction of the political agency approach to electoral competition applied to effort provision. As such, we regard it as the primary hypothesis to be tested. Hypothesis 1 does not mean that term-limited mayors have no incentives to apply for EU grants at all. Other career concerns may induce them to do so, or they may care about the population's well-being.

As discussed in Section 2, term limits became binding in Portugal in the 2013 elections but were announced in 2005. Before 2005, most mayors likely believed they could be reelected many times. In 2005, however, mayors knew that they could only be reelected a limited number of times. If mayors look more elections ahead, the *announcement* of term limits weakens their incentives to exert effort to acquire EU grants in the 2005-2009 period. Hypothesis 2 results:

Hypothesis 2. *In the 2005-2009 term, mayors closer to their final terms acquired fewer grants.*

5. Data and empirical methodology

This section describes the data gathered and the empirical strategy followed to test our two hypotheses.

5.1. **Data.** We have built an extensive panel database covering all 278 Portuguese mainland municipalities with annual data from 1998 to 2022.[12] This rich data set contains information on municipal accounts, demographic and socioeconomic data for local jurisdictions, and election data for local and central governments.[13] Municipal revenue data was collected from the Directorate General of Local Authorities (*Direção Geral das Autarquias Locais* - DGAL). Electoral and other political data were obtained from the Ministry of Internal Affairs (*Ministério da Administração Interna* – MAI). Socioeconomic and demographic data were mostly obtained from the Portuguese Institute of Statistics (*Instituto Nacional de Estatística* - INE), and unemployment data from the Institute for Employment and Professional Training (*Instituto do Emprego e da Formação Profissional* - IEFP).

The revenues from EU grants used as the dependent variable are measured in euros per capita at constant prices in 2021. Since DGAL uses the cash-basis accounting method, revenues from EU grants (and other sources) are registered in the year cash is received. Due to the considerable variation across municipalities in the levels of per capita grants received, we take their natural logs. We use several control variables in our specifications. The EU conditions part of its funding decisions on local socioeconomic circumstances. To account for the need for EU assistance, we include the first lags of the average real wage in the private sector, the unemployment rate, and the share of senior citizens in the municipal population as control variables.

[12]The 30 municipalities of the autonomous regions of Azores and Madeira are not included in the sample because they are eligible for the EU funds attributed to ultra-peripheral regions. Therefore, they are different from the municipalities located on the Portuguese mainland.

[13]We use data after 1998 because three municipalities (Odivelas, Trofa, and Vizela) were created in that year and because 1997 is the first year for which there is data on municipal unemployment (one of the control variables used).

We also control for differences across municipalities regarding political circumstances. As more experienced mayors may be more able, we control for experience effects (Alt et al., 2011). Specifically, we include a dummy variable for experienced eligible mayors who have been in office for three or more terms and were eligible for reelection until 2009.[14] The presence of swing voters (Case, 2001; Dahlberg and Johansson, 2002; Johansson, 2003; Cadot et al., 2006) is proxied by electoral volatility in the municipality, calculated as the average of the changes in the vote shares of the five main political parties from the two preceding legislative elections, divided by the national average change. We expect that little electoral volatility weakens a mayor's incentives to exert effort.[15]

5.2. **Empirical Analysis.** To test our primary hypothesis that term-limited mayors put less effort into acquiring EU grants, we exploit the introduction of term limits that became binding in the elections of 2013. This exogenously determined institutional change (by a law approved in the Portuguese parliament) provides a quasi-natural experimental setting that can be used to assess the causal effects of term limits, which determine electoral incentives, on the mayor's effort to obtain EU grants. We apply a difference-in-differences (DiD) approach across time, with mayors being eligible for reelection and mayors not being eligible for reelection.

The empirical analysis uses the panel database described in Section 5.1. The sample period (1998 to 2022) covers a total of six complete 4-year terms, with three municipal elections before term limits became binding (2001, 2005, and 2009) and three with term-limited mayors (2013, 2017, and 2021). Of the 278 municipalities, 149 had term-limited mayors in the 2010-2013 term,[16] 38 in 2014-2017 and 46 in 2018-2021,

[14]The baseline category is that of less experienced mayors who are in their first or second term in office.

[15]Descriptive statistics for all variables used in this paper are reported in Table A.1 in the Appendix.

[16]Since these mayors were elected in October 2009 and inaugurated some weeks later, they governed their municipalities for just one or two months in 2009. They did not influence the intergovernmental grants received that year. Therefore, in the

while the remaining 45 municipalities never had a term-limited mayor during the sample period. Thus, there are three treatment cohorts of municipalities, starting in 2010, 2014, and 2018, respectively, and a never-treated group of 45 municipalities.[17]

Our empirical analysis consists of three stages:

(1) We estimate a dynamic Two-Way Fixed Effects (TWFE) DiD model to generate event study plots that are used for two purposes. First, the plots are used to check the balance between treatment and control groups.[18] According to Hypothesis 2, anticipation effects are possible, as term limits were announced in 2005 but only became binding for the 2013 elections. Second, the plots provide information about the timing of treatment effects. Because of lags between mayors' efforts in acquiring EU grants and municipalities receiving EU money, we do not expect a one-to-one relationship between treatment and the dependent variable.

(2) Since our application has multiple periods and three treatment timings, the standard DiD approach would compare newly-treated municipalities with already-treated ones. In stage 1, we avoid bad comparisons between treated

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dataset, we treat their terms as starting in 2010. The same procedure is used for the following elections.

[17]The data for 2022 is used only to check if the effects of term limits persist after the term-limited mayors of the 2018 cohort leave office.

[18]The validity of the DiD framework requires that treated and control municipalities exhibit similar trends in EU grants in the pre-treatment period and that treatment assignment is as-if random. We believe that both requirements are met in our setting. First, Figure 1 of the Online Appendix shows that the EU grants received by treated and not-yet-treated (control) municipalities exhibit similar behaviour, and the joint nullity of pre-treatment effects is never rejected in our estimations. Second, Table 3 of the Online Appendix shows that treatment assignment is uncorrelated with the control variables used in the estimations. Finally, Veiga and Veiga (2019) and Lopes da Fonseca (2020) provide further evidence of as-if random treatment assignment of Portuguese mayors when term limits became binding.

and non-treated municipalities by excluding municipalities after their treatment window ends. In stage 2, we use recently developed DiD estimators that account for heterogeneous treatment effects and variations in treatment timing. These estimates are presented in the Appendix.

(3) Finally, we use a placebo falsification. To this end, we replace our dependent variable EU grants with formula-determined grants. How much formula-determined budget a municipality receives depends on its population, geographic characteristics, and fiscal capacity. By definition, the allocation of formula grants to municipalities does not depend on mayors' efforts. Consequently, formula grants form an excellent candidate for placebo falsification.

6. Empirical Results

This section discusses the empirical specification and presents the event plots of the dynamic TWFE model. Next, we show the results of the placebo tests.

6.1. Dynamic TWFE DiD model.

Let $TL_{i,t}^{j}$ be a dummy indicator equal to 1 j periods relative to i's first year of treatment ($j = 0$). We estimate the following dynamic TWFE specification:

$$ln(g_{it}) = \sum_{j=-8}^{-2} \delta_j TL_{it}^{j} + \sum_{j=0}^{3} \delta_j TL_{it}^{j} + \sum_{j=4}^{5} \delta_j TL_{it}^{j} + \mathbf{X}_{it}'\gamma + \mu_i + \lambda_t + \varepsilon_{it}, \tag{1}$$

$$i = 1, ..., 278 \qquad t = 1998, ..., 2022$$

where $ln(g_{it})$ is the natural logarithm of EU grants in municipality i in year t, $\mathbf{X}_{it}$ is the vector of control variables, μ_i are municipality fixed effects, λ_t are year fixed effects, and ε_{it} is the error term.

The first term of the right-hand side of (1) includes the pre-treatment period dummies (the first pre-treatment period, $j = -1$, is used as baseline). Following de Chaisemartin and D'Haultfœuille (2023), we apply endpoint binning to the pre-treatment (placebo) period. That is, TL_{it}^{-8} equals one for all observations eight years or more

before treatment. The parallel-trends assumption requires that the control and treatment groups are comparable in the pre-treatment period. Thus, the pre-treatment parameters must be close to zero. Anticipation of term limits jeopardizes the validity of this assumption (see Hypothesis 2). The second term represents the treatment years, the term in which the municipality i's mayor is not eligible for reelection. Because of the proposal and implementation lags, we expect δ_0, and possibly δ_1, to be close to zero. The third term includes two lagged-treatment effects. Because of the proposal and implementation lags, δ_4 and δ_5 could be negative. As we exclude municipalities for $j > 5$, we do not have coefficients for those years. In estimating (1), never-treated and not-yet-treated municipalities form the control group. We assume that the coefficients δ_0 to δ_5 represent treatment.

Figure 1 displays the estimates of the effects of term limits (δ_j) on EU grants. The estimated Average Treatment Effects on the Treated (ATET) and t-statistics for event years 0 to 5 are reported in Table A.2 in the Appendix. The top-left graph presents the estimates for the entire sample. At the beginning of event year 0, a term-limited mayor takes office. At the end of event year 3, she leaves office. The estimates for the pre-treatment years are nearly at the zero line and are never statistically significant. This indicates that the municipalities in the treatment and control groups are similar. The estimate for δ_1 and especially the estimate for δ_0 are also nearly zero. However, the estimates for δ_2 and δ_3 are negative (-0.308 and -0.320, respectively) and significantly different from zero. These results indicate a time lag of at least one, and more likely, of two years. The estimates for the lagged-treatment coefficients ($j > 3$) are also negative but only that for δ_4 is marginally statistically significant (at 10%).[19] However, the hypothesis that the estimated effects of years 3 and 4 are equal is not rejected (see the last row of Table A.2). Thus, although there seems to be a return to pre-treatment levels, it may not be immediate. Overall, the top-left graph of

[19]Including municipal-specific trends leads to larger estimated effects (see Figure 2 and Table 4 of the Online Appendix) but takes away much of the variation in grants, making the estimates potentially less reliable.

Figure 1 provides support for Hypothesis 1 that term-limited mayors acquire fewer EU funds. Moreover, the graph indicates a time lag of two years.

The other three graphs in Figure 1 present event-study plots for each cohort separately. In all cases, the estimates for the pre-treatment years do not significantly differ from zero. This gives extra credibility to the parallel-trends assumption. The estimates for the 2010 cohort do not provide support for hypothesis 2, that in the 2005-2009 term mayors closer to their final terms acquired fewer grants. Since the estimated effects for event years -5 to -1 are not statistically significant, there is no indication of anticipation effects.

Though the estimates for δ_j for each cohort are less precise than the estimates for the entire sample, the graphs show very similar patterns. For each separate cohort, the estimates indicate the most pronounced effects in the last two years of limited mayors' terms. Moreover, for the 2010 and 2018 cohorts, the estimates remain negative after the term-limited mayor leaves office ($j > 3$). As the sample ends in 2022, we cannot present estimates for the second post-treatment year of the cohort of 2018.

Recent studies argue that TWFE estimations may be biased in settings with multiple periods and cohorts if treatment effects are heterogeneous (de Chaisemartin and D'Haultfœuille, 2023; Roth et al., 2023). To further check the robustness of our results, we test for the effects of term limits on EU funding using the DiD estimators that account for heterogeneous treatment effects and variations in treatment timing proposed by Borusyak et al. (2024), Callaway and Sant'Anna (2021), de Chaisemartin and D'Haultfœuille (2021), Sun and Abraham (2021), and Wooldridge (2021). In the Appendix, Figure A.1 presents the event plots of the estimates (see also Table 5 of the Online Appendix).[20] Generally, the results for these alternative estimators are similar

[20]Figure A.1 follows closely Figure 3 of de Chaisemartin and D'Haultfœuille (2023) and part of their *Stata* code was used. Event year -1 is the baseline, except for Borusyak et al. (2024) which uses event year -8, and Wooldridge (2021) for which no estimates of pre-treatment placebos are reported.

to those for the baseline TWFE model (Figure 1), reproduced in the top-left corner of Figure A.1.[21]

6.2. **Placebo.** Our finding that the pre-treatment coefficients are close to zero confirms the validity of the DiD approach. Another well-known way to determine the validity of the DiD approach is placebo falsification.

A good candidate for placebo falsification is data on formula-determined national grants. These grants are determined by a formula stipulated in the local finance law. Hence, the allocation of these grants does not depend on its mayor's effort, nor on whether she is term-limited or not.

We estimate (1), and replace $ln(g_{it})$ with the natural logarithm of formula-determined national grants to generate event-study plots for the entire sample and for each cohort separately. The event plots, shown in Figure 2, indicate that our findings regarding the effects of term limits on EU funding are not the result of unobservables not captured by the year fixed effects, the municipality fixed effects, or the control variables. All coefficients are close to zero, showing that term limits do not affect the allocation of formula-determined grants across municipalities (see also Table 7 of the Online Appendix).

7. Conclusion

We have investigated how being eligible for reelection affects Portuguese mayors' incentives to apply for EU grants. Our main finding is that term-limited mayors reduce their efforts to acquire EU funding. In the last two years of their terms, term-limited mayors receive about 30% less EU money than mayors eligible for reelection. The estimates do not reveal any announcement effects.

[21]To further check the robustness of the results, we also estimated the models excluding the control variables. The results, shown in Figure 3 and Table 6 of the Online Appendix, are similar to those obtained when including the set of control variables (Figure A.1).

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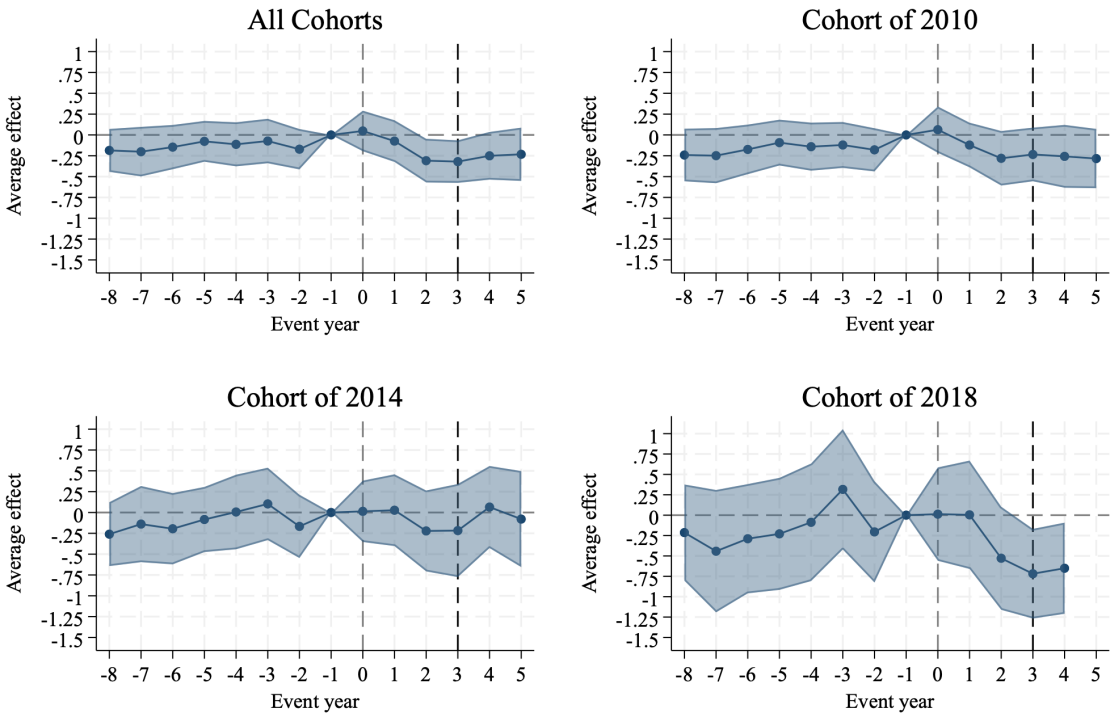
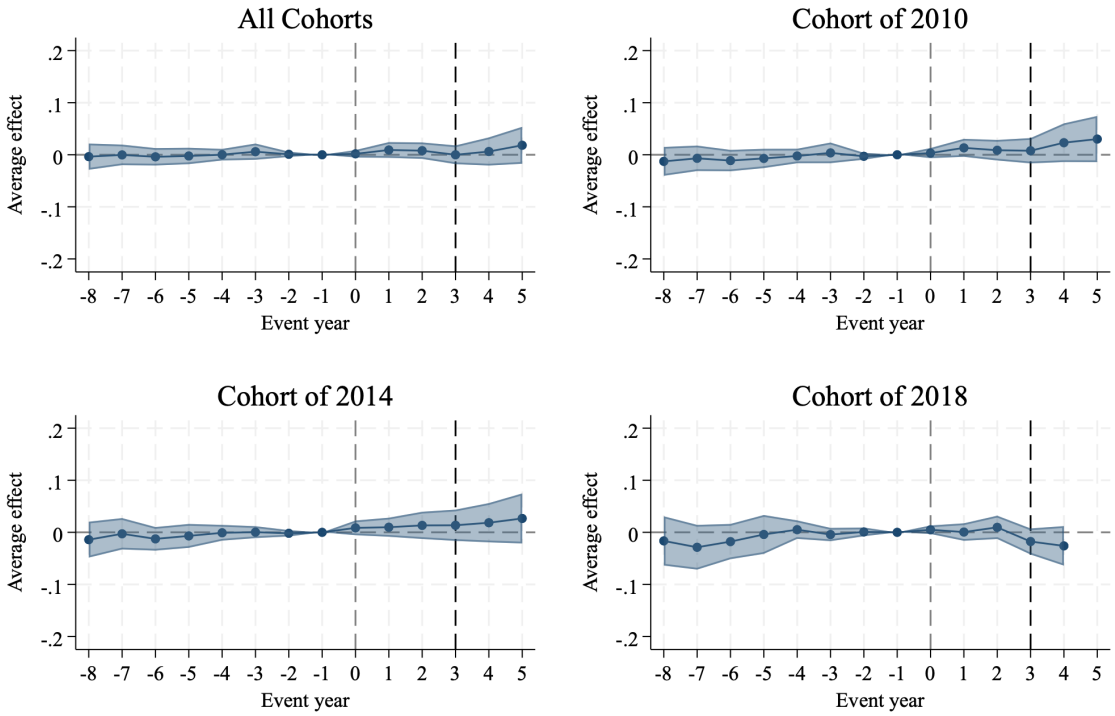
FIGURE 1. Average Treatment Effects of Term Limits on EU Grants



Notes: This figure shows the estimated effects (ATET) of mayoral term limits on the EU grants received by Portuguese mainland municipalities. Event-study plots for dynamic TWFE estimations, using the never-treated and the not-yet-treated municipalities as the control group. Standard errors are clustered at the municipal level and 95% confidence intervals are shown. The vertical dashed lines indicate the first and last years of the treatment period. Estimated ATET and t-statistics for the post-treatment period are reported in Table A.2.

FIGURE 2. Average Treatment Effects of Term Limits on Formula-Determined Grants



Notes: This figure shows the estimated effects (ATET) of mayoral term limits on the formula-determined grants received by Portuguese mainland municipalities. Event-study plots for dynamic TWFE estimations, using the never-treated and the not-yet-treated municipalities as the control group. Standard errors are clustered at the municipal level and 95% confidence intervals are shown. The vertical dashed lines indicate the first and last years of the treatment period. Estimated ATET and t-statistics for the post-treatment period are reported in Table 7 of the Online Appendix.

APPENDIX

TABLE A.1. Descriptive Statistics

VARIABLES	N. Obs.	Mean	S.D.	Min.	Max.
Real per capita grants, at 2021 prices (Source: DGAL)					
Log of European Union Grants	5,769	3.86	1.52	0.00	7.09
Log of Formula Grants	5,769	6.03	0.74	4.08	7.81
European Union Grants	5,769	99.92	113.45	0.00	1,200.64
Formula Grants	5,769	535.64	381.65	59.10	2,472.95
EU Grants (% Effective Revenues)	5,767	8.80	7.32	0.00	64.47
Formula Grants (% Effective Revenues)	5,769	47.34	17.09	3.02	87.94
Effective Revenues	5,769	1,054.84	498.99	206.78	3,706.30
Political variables (Source: MAI)					
Term-limited mayor (TL)	5,769	0.16	0.37	0.00	1.00
Experienced eligible mayor	5,769	0.24	0.42	0.00	1.00
Mayor 1st or 2nd term	5,769	0.60	0.49	0.00	1.00
Electoral volatility	5,769	0.96	0.28	0.12	3.12
Economic and demographic variables (Source: IEFP and INE)					
L.Average real wage	5,769	898.59	172.26	581.36	2,391.92
L.Unemployment rate	5,769	6.61	2.69	1.38	18.48
L.% Population above 65 years old	5,769	22.48	6.31	7.99	45.87

Note: To avoid missing or large negative values of Log EU grants, they are set to zero when EU grants are smaller than one.

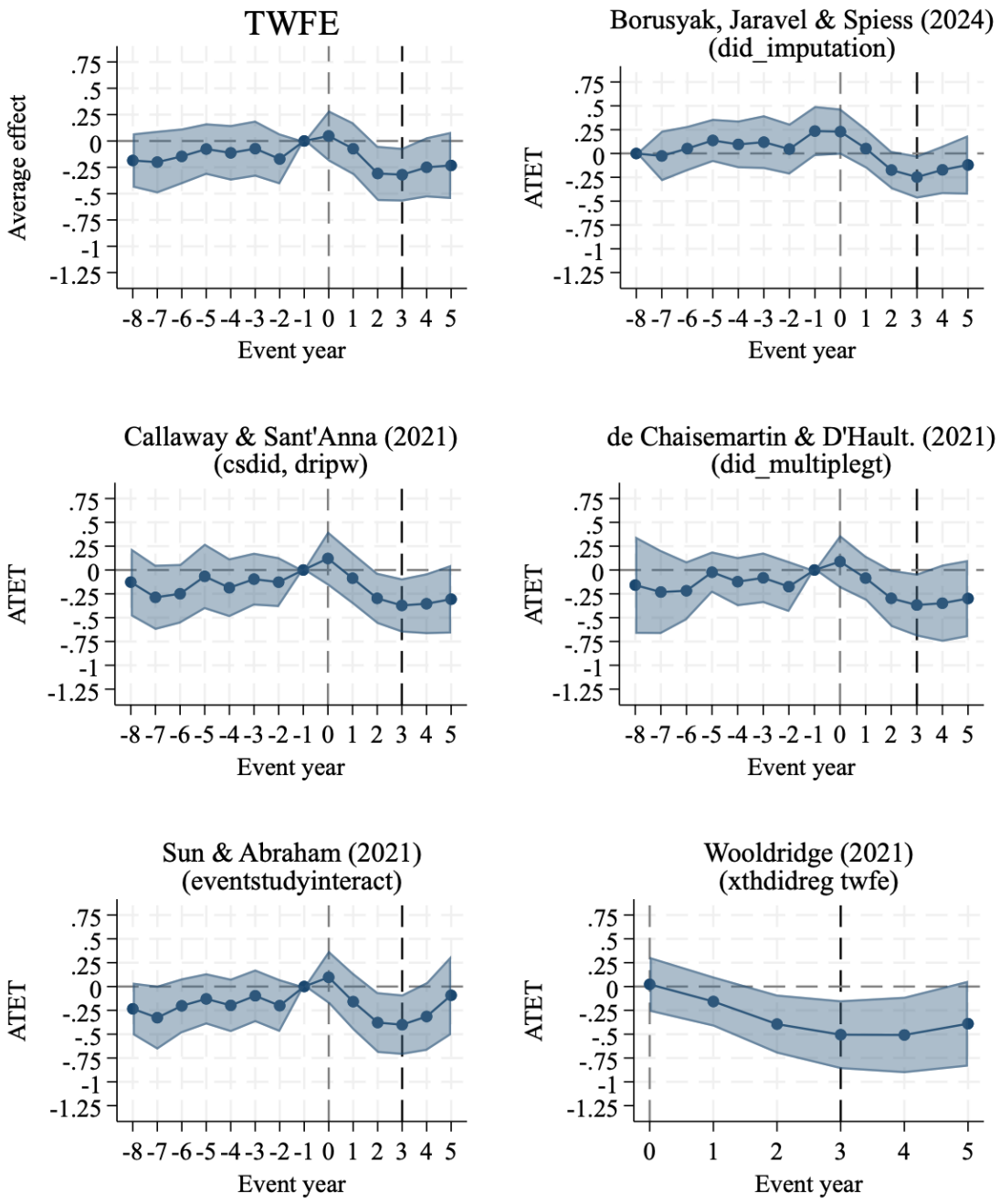
Sources: Directorate General for Local Authorities (DGAL), Ministry of Internal Affairs (MAI), National Institute of Statistics (INE), Institute of Employment and Professional Training (IEFP).

TABLE A.2. Dynamic DiD Model Results

	(1)	(2)	(3)	(4)
Event Year	All cohorts	Cohort of 2010	Cohort of 2014	Cohort of 2018
0	0.048	0.063	0.014	0.013
	(0.385)	(0.446)	(0.074)	(0.044)
1	-0.074	-0.121	0.028	0.005
	(-0.578)	(-0.887)	(0.126)	(0.014)
2	-0.308**	-0.280*	-0.221	-0.528
	(-2.307)	(-1.680)	(-0.894)	(-1.639)
3	-0.320**	-0.234	-0.217	-0.718**
	(-2.463)	(-1.428)	(-0.760)	(-2.561)
4	-0.250*	-0.257	0.066	-0.651**
	(-1.714)	(-1.336)	(0.261)	(-2.281)
5	-0.232	-0.284	-0.079	
	(-1.426)	(-1.563)	(-0.269)	
Observations	5,769	4,989	2,823	2,256
Adj. R-squared	0.440	0.442	0.420	0.426
Test for the joint nullity of the pre-treatment effects				
P-value	0.801	0.744	0.560	0.381
Test for the equality of the effects in event years 3 and 4				
P-value	0.559	0.877	0.366	0.716

Notes: Estimated ATET obtained using the dynamic TWFE specification. The control group includes the never-treated and the not-yet-treated municipalities. All estimations include control variables and account for municipal and year fixed effects. T-statistics, based on robust standard errors, clustered by municipality, in parentheses. Significance level: *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

FIGURE A.1. ATET Accounting for Heterogeneous Treatment Effects



Note: This figure shows the estimated effects (ATET) of mayoral term limits on the formula-determined grants received by Portuguese mainland municipalities. Event-study plots obtained using the estimators (and *Stata* commands) indicated in each graph. The control group includes the never-treated and the not-yet-treated municipalities. The estimated ATET and t-statistics for the post-treatment period are reported in Table 5 of the Online Appendix.