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Grants-in-aid and the prospect of re-election:
The impact of EU funds on mayoral elections in Poland

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Abstract

We investigate whether grants-in-aid help the recipient government to get re-elected. We take Poland as our testing ground and analyze the impact of EU funds spent within a municipality on mayoral elections in 2010 and 2014. We employ an instrumental variables approach to account for the endogeneity of EU funds. Our results show that EU funds do not generally increase the mayors' chance of reelection. We test whether the impact of EU funds is moderated by municipal characteristics. We find no moderating effect for the fiscal situation of municipalities but positive effects for human capital endowment and for the share of pro-European citizens. These results suggest that the political incentives inherent do not help to concentrate EU funds in regions where there is a particular need to foster economic development, nor do they help to direct funds to municipalities where the potential to reconcile EU sceptics is high.

JEL: D72, H77

Keywords: grants-in-aid, EU, Poland, local elections, instrumental variable regressions

1. Introduction

Supranational institutions like the IMF or World Bank provide grants in-aid to countries in order to promote economic development or help in times of economic crisis (e.g., Dreher, 2004; Dreher et al., 2015). The European Union uses grants-in-aid to promote the development of instracture and reduce regional disparities (e.g., Becker, 2013; Muraközy and Telegdy, 2016). Similar objectives often motivate grants-in-aid used at sub-national level (e.g. Pettersson-Lidbom, 2010; Keegan, 2012). Four distinct features describe the different schemes of grants-in-aid. First, the grants are earmarked for a specific purpose or project. Second, they are granted for a limited period of time. Third, they are given upon application of the recipient. Countries or jurisdictions that do not apply for these funds will not receive any. Finally, financial support is only granted if the applicant and the projects proposed meet certain criteria defined by the government offering grants-in-aid.

A huge body of literature has studied grants-in-aid. One strand of literature focusses on factors that drive the allocation of these funds to potential recipients. Next to socio-economic or fiscal criteria, political factors are found to influence the allocation of development aid (Dreher et al., 2015), EU structural funds (e.g., Muraközy and Telegdy, 2016; Banaszewska and Bischoff, 2017) and grants-in-aid at subnational level (e.g., Sollé-Ollé and Sorribas-Navarro, 2008; Veiga and Veiga, 2013). Another strand of literature focusses on the socio-economic impact of vertical grants – i.e. the degree to which the grants really serve their purpose (e.g., Dreher et al., 2015; Fiaschi et al., 2016). When it comes to development aid, the bottom line of this research is disillusioning: While cases of success are reported, the literature does not support the notion that development aid generally has a positive impact on the recipient countries. Instead, a positive impact is found only when certain preconditions are met (e.g., Dreher et al., 2015). Institutional quality plays an important role in this respect. The empirical literature on the effects of EU

structural funds supports this notion (Cappelen et al., 2003; Ederveen et al., 2006). Becker et al. (2013) show that EU funds are more effective in regions where the fund-absorption capacity – approximated by the availability of highly-qualified labor – is high.

In this paper, we turn to an aspect of grants-in-aid that has received little attention so far: We want to learn more about the political impact of these funds. More specifically, we ask: Do grants-in-aid help the recipient get re-elected? The answer to this question informs us about the incentives for potential recipients to utilize EU funds. If incentives differ across municipalities, we can expect differences in potential recipients' effort to attract and spend these funds. This in turn influence the aiming accuracy of the EU regional policy.

EU funds in Poland are our testing ground. We analyze the impact of EU funds spent in Polish municipalities on the mayor's chance to get re-elected. We use data for Polish mayoral elections in 2010 and 2014. Three reasons qualify Poland as a suitable laboratory for this endeavor. First, it has received a substantial support from EU funds ever since its accession to the EU. Especially in the period of the multiannual framework 2007-2013, it received massive support and municipalities were among the most prominent beneficiaries.[1] In this period, all Polish municipalities were eligible to EU funds. Thus, we can observe a large number of recipients acting under the same institutional framework and macroeconomic circumstances. Second, EU funds typically support municipal projects that are highly visible for voters (roads, schools etc.). Visibility is further increased by the obligation to label projects co-funded by EU funds by large public display boards. Third, surveys show that Polish citizens see the inflow of EU funds as the main benefit of EU accession – next to the open borders (Centrum Badania Opinii Społecznej

[1] Over 2007-2013 multiannual financial framework local governments were granted circa 30 percent of EU money allocated for Poland from structural funds and Cohesion Fund (signed contracts as of the end of February 2016) (KSI SIMIK, online).

2014). Thus, EU funds are significant in size, highly visible and potentially salient from the voters' perspective.

In our analysis, we have to deal with two potential sources of endogeneity. First, we have to account for an omitted variable bias resulting from the fact that mayors may differ in competence. A competent mayor is likely to be more successful in attracting EU funds and more popular among his voters. Second, applying for EU funds requires the potential beneficiaries to undergo considerable effort – laying out the projects they want to spend the funds on and the positive effects these projects are expected to generate. The same holds for the process of spending EU funds. EU regulations demand that recipients follow complex procurement procedures provide a careful documentation of eligible and non-eligible expenditures. Regardless of the individual competence, the incentives to undertake this effort are larger for incumbents facing a close re-election race. Thus, we have to cope with a simultaneity problem. We use an instrumental variable approach to cope with both sources of endogeneity. Our instruments build on the fact that there are substantial differences in fund availability at (sub-)regional level.

Our results can be summarized as follows: Attracting more EU funds is not found to help the mayor to get re-elected. We test whether the effect of EU funds is moderated by the municipalities' fiscal situation, by their human capital endowment or by the share of pro-EU citizens. Our conditional regressions provide evidence of a moderating effect for the latter two factors: EU funds are found to increase the mayor's re-election prospects in municipalities with high human capital endowment and/or a high share of pro-EU citizens. These results are somewhat bad news for the EU. The political incentives inherent to the EU regional policies do not help direct funds to regions where they are needed most urgently. Nor do they help to direct funds to regions where the population was initially skeptical about the EU and thus funds could help to reconcile them.

The paper is structured as follows. Section 2 discusses the related literature. Section 3 describes the institutional background before section 4 presents hypotheses, data and empirical strategy. Empirical results and sensitivity analyses are presented in section 5. Section 6 discusses the results and its policy-implications before concluding.

2. Related literature

The political economy of grants-in-aid has been addressed in a large number of studies. One argument in this respect are the so-called pork barrel politics. Accordingly, politicians in the upper-tier granting government increase their popularity in their own constituency by making sure that the latter benefits from federal grants (e.g., Veiga and Veiga, 2013). The standard literature on pork barrel politics assumes that the political benefit from additional spending accrues to the politicians in the upper-tier constituencies. Another strand of literature argues that the governments distributing grants-in-aid use the latter to promote preferred candidates or parties at the level of recipients. They show that grantee governments are found to concentrate funds in aligned or swing-jurisdictions. This pattern is reported for the allocation of EU grant (e.g. Kemmerling and Bodenstein, 2006; Bouvet and Dall'Erba, 2010; Veiga, 2012; Banaszewska and Bischoff, 2017), international development aid (e.g., Dreher et al., 2009; Kersting and Kilby, 2016) and grant allocation at the sub-national level (e.g. Sollé-Ollé and Sorribas-Navarro, 2008; Veiga and Veiga, 2013).

So far, however the literature pays little attention to the fact that application-based grants-in-aid require the recipients to play an active part. Moreover, they do not ask whether the recipients that receive more funds actually benefit through better re-election prospects. This is where our paper adds to the literature. From the perspective of a potential recipient, the essential question is: What are the incentives to apply for and spend grants-in-aid? Benevolent government are expected to

do so if they believe that grants increase local welfare while opportunistic governments can be expected to use grants-in-aid to increase their chance of re-election. The literature on the relationship between budgetary policies and election outcomes shows that voters respond positively to short-term budgetary maneuvers like tax cuts, increased expenditures or higher wages in the public sector (e.g. Lewis-Beck and Stegmaier, 2000; Cerda and Vergara, 2007; Elinder, 2010). Consequently, it is not surprising that incumbent governments deliberately launch such maneuvers in order to increase their re-election prospects (De Haan and Klomp, 2013; Dubois, 2016). The intensity of budget manipulation is larger the more uncertain the incumbent is to get re-elected (e.g. Aidt et al., 2011).

Other things equal, grants-in-aid are attractive for recipient governments because they increase their propensity to launch opportunistic budgetary maneuvers. While existing studies control for the amount of vertical grants, they usually do not place a special emphasis on their impact of the incumbents' re-election prospects. In particular, they do not control for the fact that they may be endogenous.

Only very few studies pose an exception to this rule. Dreher (2004) analyses the impact of IMF programs on the re-election of debtor governments. Building on Besley and Case (1995), he develops a theoretical model in which potential recipients of IMF programs may use support by the IMF to increase their re-election prospects. His model shows that incumbents may benefit from such programs if the economy performs badly but the incumbent is not rewarded for concluding IMF programs in better times. Dreher (2004) provides an empirical analysis using panel data from 96 countries between 1976 and 1997 that supports this conclusion. Moreno-Dodson et al. (2012) analyze the impact of development aid on the incumbents' chance of re-election in 60 aid-recipient countries between 1980 and 2005. They find that foreign aid raises incumbent's re-election probability if the degree of appropriability of foreign aid is lower than of

non-aid revenues. If, however, foreign funds are easier to appropriate than other funds, foreign aid reduces the re-election prospects. Both Dreher (2004) and Moreno-Dodson et al. (2012) use an instrumental-variable approach to control for the endogeneity of funds.

Muraközy and Telegdy (2016) analyze the impact of EU funds on re-election prospects using data from Hungarian municipalities. The paper's main focus rests on the question whether municipalities aligned with the national Hungarian government in charge of distributing EU funds receive more funds than non-aligned municipalities. At the end of the paper, they ask whether mayors in municipalities that receive more funds are more likely to get re-elected. Their answer is affirmative. They employ differences-in-differences estimations and account for time-invariant unobserved incumbent effects by first differencing. This solves the omitted variable bias resulting from the fact that a highly competent mayor is both popular and successful in attracting external funds. However, it does not solve the simultaneity problem, i.e. the fact that an incumbent mayor with a strong (weak) mandate may be less (more) motivated to apply for EU-funds.

The upcoming analysis is similar to that of Muraközy and Telegdy (2016) in that we analyze the impact of EU funds on local election results in an Eastern accession country (Poland). Methodologically, we follow Dreher (2004) and Moreno-Dodson et al. (2012) by using an instrumental variable approach.

3. Institutional background

The post-1989 transformation in Poland brought about the restoration of local self-government. Since 2002, Poland comprises of 2478 municipalities with an average population of 15,000.[2]

[2] There was a one new municipality established in the year 2010.

Municipalities became the major jurisdictions at subnational level – responsible for a wide scope of public services, among others: schooling, transportation, housing, social assistance, water supply, waste management and culture. Some 80 percent of all local revenues and expenditures flow through municipal budgets. Municipalities receive shares in personal and corporate income taxes (roughly 20 percent of total revenues). They are entitled to collect local taxes and set the corresponding tax rates. Own revenues from local taxes, fees etc. amount to one third of municipal funds while the rest stems from unconditional and conditional grants.

Poland is characterized by substantial disparities between municipalities in terms of their fiscal and economic situation. The unemployment ratio it ranges from scarcely 1% up to over 30% in economically-lagging areas – concentrated in the rural areas of Eastern Poland. Similar disparities are reported for the municipalities propensity to generate own revenues: While the fiscally strongest decile of municipalities cover 63 percent of their overall expenditures with own funds, it is only 37 percent for average municipality and 21 percent the lowest decile. Similar disparities are reported for public debt (for descriptive statistics, see Table 1). Like in other countries, urban municipalities are stronger economically and fiscally than rural ones (e.g., Banaszewska and Bischoff, 2017).

[Table 1 about here]

3.1 EU-funds in municipalities

The European Union provides substantial funds to promote regional competitiveness and reduce unemployment – especially among the young in economically weak regions. In the period of the multiannual financial framework 2007 – 2013, the funds available for their so-called cohesion policy amounted to 347 Bill Euro (European Commission, 2007). To receive funds, every

country has to develop a so-called national strategic reference framework which lays out the national strategy to promote the above objectives. The EU requires different stakeholders to play an active role in developing this framework. Above all, agents on the regional level have to be involved in the development of the so-called regional operating programs (OPs) as well as in managing the OPs. Regions are also involved in designing the mechanism of allocating EU funds and choosing the specific projects that are supported by EU funds (e.g., Heimpold, 2008; European Parliament, 2014). Poland developed 8 national and 16 regional OPs.[3]

The potential recipients differed considerably by OPs. In OP Infrastructure and Environment, for instance, a substantial amount of resources was used to fund large projects like building and reconstruction of highways, expressways, airports, railways, tram and subway networks. The regional OPs as well as the national OP on Rural Development distributed substantial amount of funds among small municipalities and jurisdictions in rural area. Overall, some 30 percent of EU-funds distributed within the multiannual framework 2007-2013 went to municipalities. Thereby, municipalities are among the biggest beneficiaries of EU funds in Poland. Projects supported by EU funds include both "hard projects" (building and modernizing infrastructure) and "soft projects" (trainings, events, consulting services etc.) within a wide scope of fields such as transportation, technical utilities, schooling, social assistance, culture, tourism and sports.

During the period of EU multiannual financial framework 2007–2013, the whole territory of Poland was eligible for European Regional Development Fund, European Social Fund and Cohesion Fund. Rural areas and smaller towns benefited from funds implemented within the Common Agricultural Policy and Common Fisheries Policy, which are subject to coordination

[3] Including OP Development of Rural Areas and OP Balanced development of the sectors of fisheries and coastal fishing regions.

with cohesion policy (Council Regulation (EC) No. 1083/2006). Our measure of EU funds encompasses expenditures from all of these funds.[4] The amount of EU-funds per capita spent amounted to PLN 361 (90 €) on average in the first election term (2007 – 2010) and rose to 662 (165 €) in the second election term (constant prices). Figure 1 shows that there is substantial dispersion between municipalities. In the years 2007-2014, expenditures financed by EU funds accounted for 5 percent of total municipal expenditures on average with levels well above 6 percent for the second election term (2011-2014). EU funds contributed to overall spending in many different fields of local government activities, the largest one among them being transport and communication, municipal economy and environmental protection, agriculture and hunting[5], education and upbringing, and culture and national heritage protection. More than 56 percent of the overall EU-funds spent by Polish municipalities was spent on investment projects. On average, EU funds account for 15 (26) percent of municipal investment expenditures in the first (second) election term respectively. In sum, EU funds are spent on highly visible projects and the utilization of EU funds can be expected to have a considerable impact on citizens' living conditions.

[Figure 1 about here]

Funds from the regional and national OPs are not allocated automatically but require an active application. In their application, municipalities have to describe the project and explain how it contributes to the overall aim of the OP they apply to. The applications goes to the OPs' managing authorities. The managing authorities assess the quality of the municipalities' applications and choose the projects to support. Later on, the managing authority plays a

[4] Our variable of interest are expenditures denoted as financed or presumed to be financed from non-refundable EU funds. Only in extraordinary and rare circumstances (i.e. misuse of funds) these figures do not conform with funds actually obtained from grantee institutions.

[5] This area of spending stands for, above all, spending on rural infrastructure.

prominent role in the monitoring project progress. This includes the essential decision about refunding the project expenditures (e.g. Banaszewska and Bischoff, 2017). To have expenditures refunded, municipalities have to follow strict procurement rules and carefully document funds – differentiating between eligible and non-eligible expenditures. Thus, both applying for as well as spending EU funds involves considerable additional effort and scrutiny.

EU projects require co-financing by beneficiaries. The co-financing rate is program-specific and uniform within groups of beneficiaries (e.g., municipalities). In some cases, the own contribution is partly covered through public deficits.[6] The Public Finance Law (2009) states that public deficits used to co-finance EU-funded projects do not count towards the legal debt brake for municipalities. The purpose of this exemption is to avoid that municipal debt prevents Polish municipalities from acquiring for EU funds. Consequently, municipalities report both EU-related and other debt.

3.2 The mayor – a key player in municipal government

Political decisions in Polish municipalities are made by the mayor and the municipal council – both directly elected by the local residents. The reform of 2002 has vested the mayor with excessive executive competences while the municipal council's power is very limited (Bober et al. 2013: 28–30). For instance, mayors have the exclusive right to submit a budget proposal. The municipal council does not have the power to remove the mayor, nor does it possess any means to force the mayor to implement its legislation (Krasnowolski 2010: 7). Electoral rules further strengthen the dominant position of the mayor. The right to propose a mayoral candidate is restricted to voting committees that register councilor candidates in at least half of voting districts

[6] Public deficits are also used to finance project costs until the managing authorities reimburse the costs.

(Act of 5 January 2011). As a result, on average almost 50 percent of councilors belong to the same voting committee as the mayor.

Voting committees can be established by political parties and their coalitions, social organizations and groups of voters. The majority of mayors in Poland is independent from national political parties in the sense that they are neither member of any national political party, nor are they endorsed or proposed by one of them. Instead, they are nominated by a local voting committee that itself does not entertain any relation to national parties. In our period of observation, 65 percent of Polish mayors are independent. Independent mayors are not only found in small municipalities. Even in the biggest municipalities (with above 100,000 inhabitants), more than 40 percent of mayors are independent. The role of national political parties in local government politics in Poland is among the lowest in all European countries (Swianiewicz 2014: 298–299). According to a public opinion poll as of 2006, over 80 percent of voters choose a mayoral candidate on the basis of, above all, his/her personal traits (Centrum Badania Opinii Społecznej, 2007).

Local elections are held every four years simultaneously in all municipalities on dates determined by the central government. To be (re)elected, a mayoral candidate has to receive the majority of votes. If the first ballot does not determine the winner, the two candidates with the highest numbers of votes run against each other in a second ballot.[7] There are no legal term limits. The rules pertaining to mayoral elections are uniform across all municipalities.

[7] In case of lack of candidates or in situation in which a sole candidate does not receive over 50-percent support, a mayor is appointed by a municipal council (Act of 5 January 2011). Such instances are incidental as this procedure was implemented only in two municipalities in 2010 election.

4. Hypotheses, data and empirical strategy

The aim of our paper is to test whether EU funds have a positive impact on the incumbent mayor' re-election prospects. This positive impact may be rooted in two different effects: a short-term effect of additional expenditures in times near the election (see section 2) and a long-term effect of EU funds. In this paper, we are interested in the long-term effect. Thus, we concentrate on the EU funds spent within the municipality throughout the entire term of office. There are different reasons as to why voters may reward the incumbent for high EU-funded expenditures. First, they may take the mayors' ability to utilize large amounts of EU funds as an indication of his competence. Two other arguments build on the literature on retrospective voting. The latter shows that voters reward politicians for doing what voters consider to be their job and punish them for not doing it well (e.g., Nannestad and Paldam, 1994, 1995; Bischoff and Siemers, 2013). Very generally, voters may reward the incumbent for the additional investments in local infrastructure. In addition, surveys show that Polish citizens see the inflow of EU funds as the main benefit of EU accession (Centrum Badania Opinii Społecznej, 2014). Thus, attracting and spending EU funds is likely to be one of the yardsticks by which Polish voters assess their mayors. All these arguments lead to our first hypothesis:

Hypothesis 1:

EU funds spent by a municipality within an election term improve the incumbent mayor's chance of reelection.

The study by Dreher (2004) indicates that the impact of external funds may depend on the circumstances in which the funds are spent.[8] In particular, he shows that external funds – in his case from the IMF – only help the mayor if the economic situation is bad and thus the need for

[8] The impact of institutional factors and appropriability of funds (see also Moreno-Dodson et al. (2012)) cannot be tested using our data as all mayors operate under the same institutional framework.

external funding is immanent. In the context of local government policies, the need for external funding strongly depends on the municipalities' general capacity to raise own funds. Thus, Dreher's argument – when adapted to the role of EU funds in local elections – translates into the following hypothesis:

Hypothesis 2:

The impact of EU funds on the incumbent mayor's chance of reelection is larger the lower the capacities of his municipality to raise own funds.

The literature on the economic impact of EU funds points at another moderating factor: Becker et al. (2013) show that the impact of EU funds on income growth and investments is conditional on region's fund absorption capacity – approximated by the amount of human capital endowment. If voters reward the mayor not for spending EU funds as such but are interested in the long-term economic effects of these funds, the electoral reward for an additional Euro of EU-funds spent is larger in municipalities with larger fund absorption capacity. Thus, the heterogeneity in economic effects of EU funds, in turn, may translate into heterogeneous electoral appeal of EU funds utilization. Building on this premise, we formulate the following hypothesis:

Hypothesis 3:

The impact EU funds on the mayor's reelection prospects increases with the human capital endowment in his home municipality.

Finally, the impact of EU funds may depend on the local electorate's attitude towards the EU. Ex ante, however, it is not clear how EU-supporters and EU-sceptics will evaluate the fact that their municipality has spent large amounts of EU funds. On the one hand, one can argue that EU-supporters have a more favorable view on EU-funds in general and thus are more supportive of large amount of these funds being spent in their municipality. This course of argumentation leads to hypothesis 4A:

Hypothesis 4A:

The impact EU funds on the mayor's reelection prospects is larger the larger the share of EU-supporters in the local electorate.

On the other hand, EU-sceptics may regard the extraction of EU funds as a form of compensation for having been outvoted in the EU-accession referendum in 2003. This leads to hypothesis H4B:

Hypothesis 4B:

The impact EU funds on the mayor's reelection prospects is larger the smaller the share of EU-supporters in the local electorate.

We test these hypotheses using data on elections in 2010 and 2014. This time span roughly corresponds to 2007–2013 EU multiannual financial framework.[9] It is important to note that our observational unit is not the municipality but the incumbent mayor who runs for re-election. Thus, we have to drop observations (i.e., combinations of municipalities and election terms) in which an incumbent mayor did not attempt to be re-elected. Given that almost 90 percent of all mayors run for office again, we still cover the largest part of local elections in Poland in 2010 and 2014. Out of the 2,479 Polish municipalities, 2,458 municipalities are included in our sample for one election at least. To test for a possible selection bias, we run probit regressions to identify factors driving the mayor's decision to run again. We find no evidence that the variables related to EU funds or the factors potential moderating the effect of EU funds drive this decision. Instead, the mayor's age is the dominating factor (see Table A.3 in the Appendix).

In the first round of the mayoral elections, the average number of mayoral candidates was 3.14 in 2010 and 3.24 in 2014. Less than 10 percent of all incumbents ran up without a challenger. Incumbent mayors obtained 58 percent of votes in 2010 election and 54 percent in 2014 election

[9] Because of "t+2 rule" and ongoing entry procedures regarding 2014–2020 multiannual financial framework, the respective spending in the year 2014 represent almost exclusively funds allocated for the period 2007–2013.

on average (see Figure 2). In 55 percent of all cases, the incumbent won more than 50 percent of the votes in the first round.

[Figure 2 about here]

Figure 3 presents the EU funds per capita spent in municipalities – differentiated by the political fate of the mayor. It shows that mayors who run for election and get re-elected have spent considerably larger amounts of EU funds per capita in their last term than mayors who run for re-election but fail to get re-elected. This results holds true for both election periods 2010 and 2014.

[Figure 3 about here]

Of course, this simple univariate comparison does not allow for a causal interpretation. Apart from the fact that important covariates are ignored, there are two potential sources of endogeneity that need to be taken care of. First, we have to account for an omitted variable bias resulting from the fact that mayors may differ in competence. A competent mayor is likely to be more successful in utilizing EU funds and more popular among his voters. Second, utilizing EU funds requires municipalities – and thus mayors – to play an active role. In the application for funds, they have to lay out the projects they want to spend the funds on and the positive effects these projects are expected to generate. Once the application was successful, spending the funds requires considerable additional administrate effort (see section 3.1). The incentives to undertake this effort depend on the local situation the incumbent is in. In particular, it seems straightforward that the incentives are larger for incumbents facing a close re-election race. Thus, we have to cope with a simultaneity problem.

To tackle omitted variable bias and simultaneity bias, we employ a panel IV approach (see Dreher, 2004; Moreno-Dodson et al., 2012). We use instruments that capture the availability of EU funds at the local level. The availability of EU funds as such does not influence the mayor's re-election probability yet is the essential precondition for the possibility of the mayor to spend

EU funds in his municipality. The re-election probability itself is only influenced by the funds the mayor actually spends in his municipality, not by their availability as such. Furthermore, the availability of funds does not depend on the mayor's competence or his incentives to utilize EU funds in order to win the election. Thus, variables that capture the availability of EU funds at the local level are suitable instruments.

In the regressions reported in section 5.1, we use two instrumental variables to capture the local availability of EU funds. As first instrument, we use the per capita EU funds spent in the relevant region and election term. This variable captures inter-temporal and inter-regional differences in the availability of funds resulting from differences in regional OPs and the eligibility to national OPs. One essential shortcoming of the variable is that it ignores any intra-regional differences in fund allocation. To account for these differences, our second instrument builds on data at sub-regional level – equivalent to NUTS3 statistical level (66 sub-regions in total). Specifically, we use the average per capita amount of EU funds utilized within the sub-region the relevant municipality is located in. Macroeconomic data in Poland is available at this sub-regional level. As this data plays an important role in guiding EU fund allocation, we expect differences in macroeconomic variables between sub-regions to influence the fund allocation by the managing authorities of national and regional OPs. Both instrumental variables capture only expenditures for those mayor-term combinations that are excluded from our sample because the mayor did not run for re-election. Thereby, our instruments capture fund availability at regional and sub-regional level without being inflicted by a simultaneity bias.

To approximate the mayor's probability of re-election, we use the incumbent mayor's vote-share in first round of the election. We prefer this to a dummy variable indicating whether or not the incumbent finally won the election because this dummy does not differentiate between 'slight'

and 'crushing' election defeats. The vote-share is a very good predictor of the mayors' re-election prospects with a direct correlation coefficient of 0.68.

EU spending is expressed as a natural log of real per capita expenditures over term of office. As mayoral elections are held in November, we define the incumbent mayors' term to cover the three years prior to the election plus the election year itself. Summing up, our regression approach looks like this:

$$EU\_fund\_per\_capita_{it} = a + b\, Instruments_{it} \cdot + g \sum Controls_{it} + e_{it} \quad \text{(stage 1)}$$

$$Vote\_share\_round\_1_{it} = \alpha + \beta\, EU\_fund\_per\_capita_{it} + \gamma \sum Controls_{it} + \varepsilon_{it} \quad \text{(stage 2)}$$

where:

i = mayor that runs for re-election in municipality i

t = election term

It is important to note that the variable *EU funds per capita*$_{it}$ captures the amount of EU funds spent by municipality i in election term t. This does not automatically mean that the incumbent himself attracted these funds. While the application-execution-cycle often coincides with an election term, there are cases when the incumbent spent more funds than he himself attracted. This does not impact the validity of our regression approach for two reasons: First, voters typically cannot tell the difference between expenditure funded by means that the incumbent himself attracted and expenditures funded by means attracted earlier. Second, it is not only the application for funds that requires an extra effort by the mayor. Additional administrative efforts and scrutiny is also required in the process of spending EU funds because there are many complicated regulatory rules to follow.

We introduce a number of control variables. The choice of control variables is guided by the literature on determinants of re-election prospects (see section 2). First, following the standard

logic of the theory of opportunistic spending cycles, we include gross municipal expenditures in the election year. As the EU funds spent in the election year are part of these gross expenditures, the use of gross expenditures covers up one channel through which EU funds may help the mayor to get re-elected. We are nevertheless convinced that they must be included for the following reasons: First, there are important expenditures not funded by the EU that are likely to influence voters. Omitting these expenditures would lead to an omitted variable bias. Second, our control "gross expenditures" captures only the election year itself while our EU funds variables capture the amount of funds spent throughout the entire term – thus capturing the channel of influence relates to the long-term effect of EU funds. This is the effect we are primarily interested in.

Second, we introduce the local level of unemployment. We are aware of the fact that including the unemployment rate may cover up one of the channels through which EU funds increase the mayor's re-election prospects: EU funds – especially those spent on investments – may boost the local economy and generate employment opportunities for the local population. Unlike in the case of gross municipal expenditures, the unemployment rate in the election year may well be influenced by the EU fund spend throughout the entire term. To make sure that this 'bad control problem' (Angrist and Pischke, 2014) does not bias our estimates, we will report specifications that exclude the unemployment rate as a robustness check.

We also take into account the debt-to-revenues ratio at the beginning of election year. Our baseline specification uses overall debt – including the debt used to co-financing EU-funded projects (see section 3.2). In later specifications, we use a measure excluding this debt. We capture the share of EU-supporters in the local population by using the fraction of 'yes' votes in the EU-accession referendum held in 2003. In addition, we control for the share of highly educated population. This measure is taken from the 2002 National Census and defined to be the ratio of the number of inhabitants with higher education by the population older than 25 years.

The denominator is chosen this way to avoid any bias from differences in the age composition across municipalities. As further control variables, we use the log of population, the share of young population, the share of population economically dependent on agriculture and the human development index (lagged by 1 election term)[10]. We also control for the mayor's age and party affiliation. A dummy identifies cities with county rights.[11] Finally, region dummies capture time-invariant region-specific unobserved heterogeneity and year dummies control for trend common to all municipalities. Standard errors are clustered at municipal level.

5. Results

5.1 The unconditional impact of EU funds on the mayors' re-election prospects (Hypothesis 1)

In this section, we present the test for the unconditional impact of EU funds spent in a municipality on the incumbent mayor's chance to get re-elected (Hypothesis 1). Before we apply the IV approach to control for the endogeneity of EU funds, we report a naïve regression model that treats EU funds as exogenous (column 1). As in Muraközy and Telegdy (2016), we obtain a positive and statistically significant coefficient for EU funds.

In column (2) – (5), we report results of an instrumental variable approach as described in expression (1) and (2) in section 4. The regression diagnostics show that EU funds are clearly endogenous (Wooldridge, 2013, p. 534, 535). Our instruments satisfy the overidentification restriction and the Kleibergen-Paap Wald F statistic indicates that our instruments are sufficiently

[10] Human development index consists of three components: health of citizens, education and income. The index spans from 1 (the worst situation) to 100 (the best situation). A watchdog Moja Polis publishes the indices for cities with county rights and counties.

[11] Socio-economic and demographic variables were extracted from Central Statistical Office Local Data Bank. Mayoral election and EU referendum results were obtained from National Electoral Commission.

strong.[12] Compared to column (1), the coefficients for EU funds becomes substantially smaller and insignificant. Standard errors are larger by the factor 7. At the same time, the coefficients in column (2) – (5) take on values outside the 95% confidence band (0.974 - 2.141) reported for the corresponding coefficient in column (1). Thus, Hypothesis H1 is not supported.

[Table 2 about here]

Next, we redo the regressions using a reduced sample containing only those observations in which an incumbent mayor from 2006 ran again in 2010, won this election, and reran again in 2014. The number of observations is considerably smaller, yet we can now include mayor-fixed effects and thereby control explicitly for unobserved heterogeneity among mayors – including differences in competence. Like in the baseline, we first report results from a naive panel regression model. This time, we do not find a statistically significant effect of EU funds (column 6). The IV test statistics inform us that EU funds do not have to be considered endogenous while our instruments remain strong and valid.[13] In panel IV fixed-effects regressions (column (7)), we obtain a negative yet insignificant coefficient for EU funds. The same results emerge when applying the specifications in column (3) – (5) to the reduced sample (nor reported here). Thus, again, Hypothesis 1is not supported.

Let us comment briefly on the performance of our control variables. In line with the previous literature, we find a positive impact of pre-electoral expenditures on incumbents' voting result in most specifications. In the random effects models, the mayor's reelection probability is found to be negatively associated with unemployment. The respective coefficients lose their statistical significance in fixed-effects models. Re-election prospects decrease in the debt-to-revenues ratio, irrespective of whether we consider overall debt or debt without EU-related debt. Again,

[12] Kleibergen-Papp Wald F statistics exceeds both Stock-Yogo critical value for maximum 10% bias and satisfy "rule of thumb" (F statistics > 10) (Baum et al., 2007).

[13] This time both instruments vary over time.

coefficients cease to be statistically significant in the fixed effects regressions. In the random effects specifications, we observe consistently positive effect of the share of young population. The negative coefficient observed for city with county rights suggests that governing this specific type of municipalities is a more complex task and/or it is difficult to satisfy probably more heterogeneous preferences. Alternatively, political positions in cities with county rights may be more attractive (e.g. through more prestige) and thus more competent challengers apply – making political competition more intense and reducing the re-election prospects of an incumbent. The highly significant and negative coefficient of mayor's age clearly shows that voters prefer younger incumbent candidates.

5.2 The role of moderating factors on the impact of EU funds on the mayors' re-election prospects (Hypotheses 2-4)

In the next step, we turn to our hypotheses 2 - 4. Each of them suggests a specific factor to moderate the impact of EU funds on the mayors' re-election prospects. Table 3 presents the moderating factors described in the hypotheses together with the variables we use to approximate these factors.

[Table 3 about here]

The impact of these moderating factors is tested by introducing the interaction of the moderating factor and the EU funds per capita and term to the regression model. This creates the need for new instruments. We follow Wooldridge (2002, p. 133) and simply use the interaction of the moderating factor and two instruments capturing fund availability as additional instruments. As the over-identification test was not satisfied when using the two instruments used in section 5.1, we had to introduce a new instrument. This new instrument builds on the literature on the political economy of vertical grants (see section 2). This literature suggests that the regional

government give more funds to municipalities where the local population is politically aligned with the parties in the regional government. Banaszewska and Bischoff (2017) find this form of alignment to be a highly significant determinant of EU fund allocation in Poland during the multi-annual framework 2007 – 2013. The new instrument captures the degree to which the regional government in charge of allocating EU funds is aligned with the political party preferences of the municipality's electorate – as expressed in the national elections. More precisely, it captures the timeshare within a specific electoral term (2007-2010 and 2011-2014) that one of the parties in the regional government received the largest vote share among the municipality's electorate in the national elections. It is normalized to the interval [0,1] – taking on the value 1 if this form of alignment holds for the entire mayoral election term and it is 0 if this form of alignment is not present throughout the entire term. As this instrument refers to local residents' voting decision in the national elections, it is not linked to their voting behavior in local elections. First, national and sub-national elections are held in different years. Second, the parties running in national elections and dominating the regional governments hardly play any role in local elections. Only 11 percent of mayors in our period of observation are linked in any way to the two dominant parties Civic Platform and Law and Justice. In the following regressions, this new instrument replaces the first instrument (regional availability of EU funds). Thus, together with the two interaction terms, our instrumental variable approach uses four instruments. Among the possible combinations of instruments, this set of instruments performs best in terms of the Kleinberger-Papp-statistic and the size of the standard errors of the instrumented variables while comfortably passing the over-identification tests.

Table 4 reports a number of regression models using the total EU funds per capita and interaction term as primary variables of interest. The models cover all moderating factors named in table 4. Given the limited space, we restrict the presentation to the models equivalent to specifications (2)

and (3) in Table 2. The regression diagnostics generally identify the wider sets of instruments as strong and exogenous. Exceptions are specifications using the EU referendum 'yes' votes as moderating factor (columns (7) – (8)). For these models, we report Anderson-Rubin Wald and Stock-Wright LM statistics. They indicate that in the case of interactions with percentage of EU-friendly population at least one instrumented variables is significant.

[Table 4 about here]

[Figure 4 about here]

According to hypothesis 2, the electoral effect of EU funds is large if the municipality cannot build on own funds to finance the necessary investments into infrastructure. We capture the availability of own funds by using the ratio of municipal debt (excluding EU-related debt) to revenues. As reported in Table 4 (columns (1) and (2)), the interaction between EU funds and debt is positive but only weakly significant. [14] More importantly, the margin plots corresponding to model 1 and 2 show that the conditional effect of EU funds on re-election prospects is insignificant, irrespective of the debt-to-revenue ratio (see Figure 4). Thus, hypothesis H2 is not supported.

Hypothesis H3 states that the impact EU funds on the mayor's reelection prospects increases with the human capital endowment in his home municipality. We use two different indicators to capture the municipalities' human capital endowment. First, we use the human development index. To avoid reverse causality, it is lagged by four years.[15] The coefficient on EU funds is not significant, while the interaction terms is positive and statistically significant. The margin plots (see Figure 4) show that a statistically significant positive effect of total EU funds on incumbent

[15] With the exception for human development index for term-of-office 2007-2010. Instead of data for the year 2006 we refer to the earliest available observations for the year 2007.

mayor's re-election prospects in municipalities with human development index exceeding 51. Whereas only 7 percent of all Polish municipalities exhibit such high levels of social capital, their share in total population amounts to 30 percent.

As an alternative measure for the human capital endowment, we use the share of highly educated inhabitants. The interaction term is positive and statistically significant. The marginal plot (figure 4) points at positive effect of total EU funds attraction in municipalities with over 15 percent inhabitants with higher education (approx. 5 percent of all municipalities with 33-percent share in total population). In sum, the results support Hypothesis 3

Finally, we argued that the impact EU funds on the mayor's reelection prospects depends the share of pro-European voters in the local electorate. In this case, the direction of influence is unclear ex ante (see Hypothesis H4A and H4B). The interactions with the share of EU-friendly population in Table 4 are statistically significant and positive. The margin plot displayed in Figure 4 shows that total EU funds improve mayor's reelection chances in 5-8 percent of all municipalities (i.e. those with more than 85-86 percent EU-supporters). Municipalities for which the conditional effect of EU funds is significantly positive account for 11-19 percent of total population. At the same time, the effect of EU funds spent by incumbent mayor on his re-election prospects does not turn negative in municipalities with a large majority of EU sceptics. Thus, our results support hypothesis H4A while H4B is not supported.

5.3. Sensitivity analyses

We run numerous additional specifications to test the robustness of our results. These include different combinations of control variables and regressions for independent mayors only. In addition, we account for the fact that voters may not be able to distinguish between EU projects implemented by their municipality and those implemented by the county government. We rerun

the regressions in table 2 and include the per capital total EU funds spent by county and term as additional control variable. The unconditional electoral effect of EU funds spent by municipality remains insignificant and the additional control variable itself is far from significant. Finally, we apply the third instrument (alignment between the local population and the regional government, see section 5.2) in the specifications underlying the test of hypothesis H1 (section 5.1). Adding this instrument or using it instead of one of the other instruments does not yield any support for hypothesis H1. The relevant coefficient always remains far from significant while the alternative combinations of instruments are always substantially weaker than the ones for which we reported the results.

6. Discussion and conclusion

In the multiannual framework 2007-2013, EU Cohesion and structural funds have supported Polish municipalities with 12 Bill. Euro in total – an average of 320 Euro per capita. Surveys show that the Polish regard these inflowing funds to be one of the crucial reasons to support EU-accession. Thus, EU-funds are politically salient. Mayors play a crucial role in preparing the applications for EU funds and spending the funds once the money is approved. The funds are used to support municipal projects that are of particular interest and visible for voters (roads, schools etc.). Thus, we hypothesized that mayors that spend high amounts of EU funds thereby increase their chance of re-election. We test this hypothesis using an instrumental variable approach that accounts for the endogeneity of EU funds.

Our results indicate that EU funds spent in a municipality do not increase the incumbent mayor's re-election prospects. This result remains stable in a number of different specifications including models with mayoral fixed effects that control for unobserved heterogeneity, e.g. the mayors' competence. This result is in line with the studies of Dreher (2004) and Moreno-Dodson et al.

(2012) on the electoral effect of development aid – showing that grants-in-aid do not per se help the recipient government get re-elected. At the same time, our result contradicts the findings of Muraközy and Telegdy (2016) who find an unconditionally positive electoral effect of EU funds on local elections in Hungary. These divergent results may be rooted in structural difference in the mechanisms of local government politics between Hungary and Poland. Alternatively, they may result from the fact that Muraközy and Telegdy (2016) do not account for the simultaneity problem (see section 4).

In a next step, we ask whether the effect of EU-grants is moderated by municipal characteristic. We adapt the argument of Dreher (2004) on the electoral effect of IMF-programs in recipient regions and test whether the need for external funding has a moderating effect. The answer is negative: Mayors cannot be expected to be rewarded for utilizing EU funds even when the municipalities' fiscal capacitiy is limited. On the other hand, we do find evidence that spending of EU funds becomes more rewarding for the incumbent mayor the higher the human capital endowment of local community is. A significantly positive effect emerges for municipalities with a large share of highly educated citizens. A moderating effect is also found for the share of EU-supporters in the electorate. Mayors in municipalities with a large share of EU-supporters are rewarded for spending EU funds.

Our study is not without shortcomings. First, we cannot clearly differentiate between funds attracted in an election period and funds spent in this period. However, we believe that this does not challenge our main results because voters most likely cannot tell the difference either. All they see are public display boards indicating that a certain school, road etc. has been built with the support of the EU. Second, we have little information regarding the candidates who challenge the incumbents. Finally, our data is limited to one country and one EU multiannual period – thus limiting the generalizability of our results.

What are the implications of our study? For once, the absence of a positive electoral effect of EU funds per se suggests that politicians do not apply for and spend EU funds just to get re-elected. If this incentive to utilize EU funds is not relevant, municipalities have one reason less to engage in window-dressing when applying for the funds. This in turn has the potential to reduce the social waste generated in the process of EU fund allocation (e.g., Bischoff and Blaeschke, 2016). On the other hand, this interpretation implies that mayors' utility from spending EU funds must stem from other sources. For once, the mayors may be benevolent. Alternatively, mayors may benefit from spending EU funds because the associated procurement procedure opens up opportunities for corruption and rent-extraction (e.g., Mironov and Zhuravskaya, 2016). Although the EU applies a number of mechanisms to curtail corruption, the decentralization in the fund allocation process implemented in the multiannual framework of 2007-2013 may have strengthened this motive. This interpretation is in line with the result of Moreno-Dodson et al. (2012). They find no positive effect of grants-in-aid in cases where lax regulation allows an expropriation of these funds.

When it comes to the impact of moderating factors, two implications become immanent. The first implication refers to the fact that EU-funds increase the election prospects of mayors in municipalities with a large share of highly educated inhabitants. When combined with the results of Becker (2013), this result suggests that mayors in municipalities where EU funds have a larger economic impact also face particularly high incentives to attract them. While this result is positive from an efficiency point of view, it implies that EU funds may be less effective in directing funds where there are needed most. The second implication refers to the fact that EU funds increase the election prospects of mayors in municipalities with a large share of EU-supporters while it does not in municipalities where this share is lower. This is bad news for those hoping that EU funds will reconcile the sceptics and increase public acceptance of the EU over

time (e.g., Garry and Tilley, 2009; Jackson et al. 2011). It is especially these municipalities where the incumbent faces little incentives to utilize EU funds.

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Figures and tables

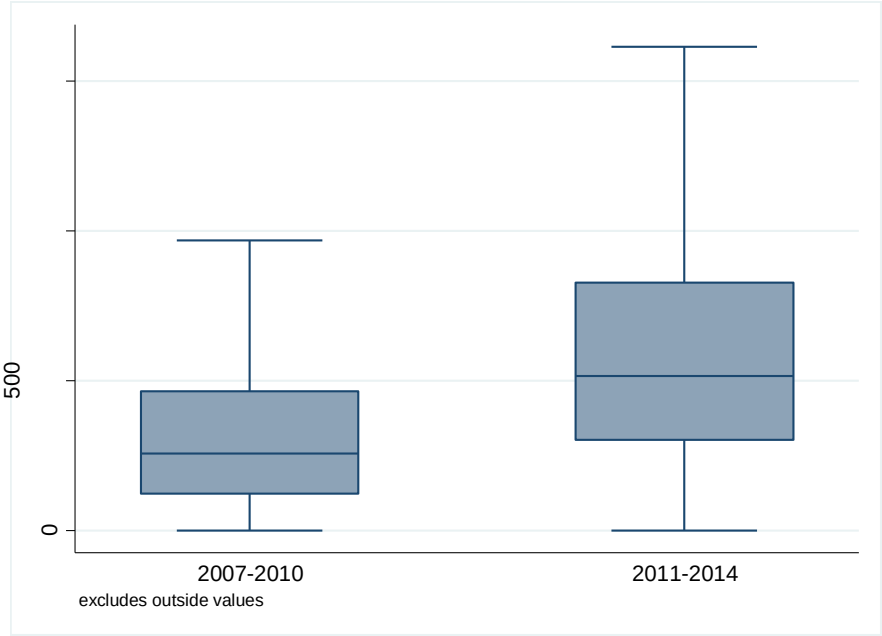

Figure 1. Distribution of EU spending per capita over term-of-office 2007-2010 and 2011-2014 (in PLN, constant prices)

Excludes outside values, i.e. values outside range [lower quartile – 1.5 interquartile range; upper quartile + 1.5 interquartile range].

Source: own elaboration on the basis of Ministry of Finance data.

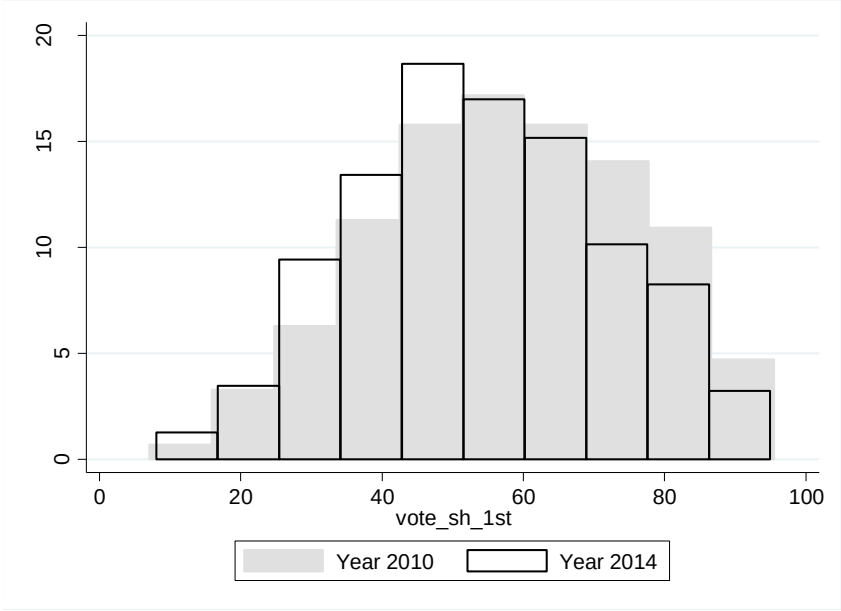

Figure 2. Distribution of incumbent's vote share in 1st round by election year

Source: own elaboration on the basis of National Electoral Commission data.

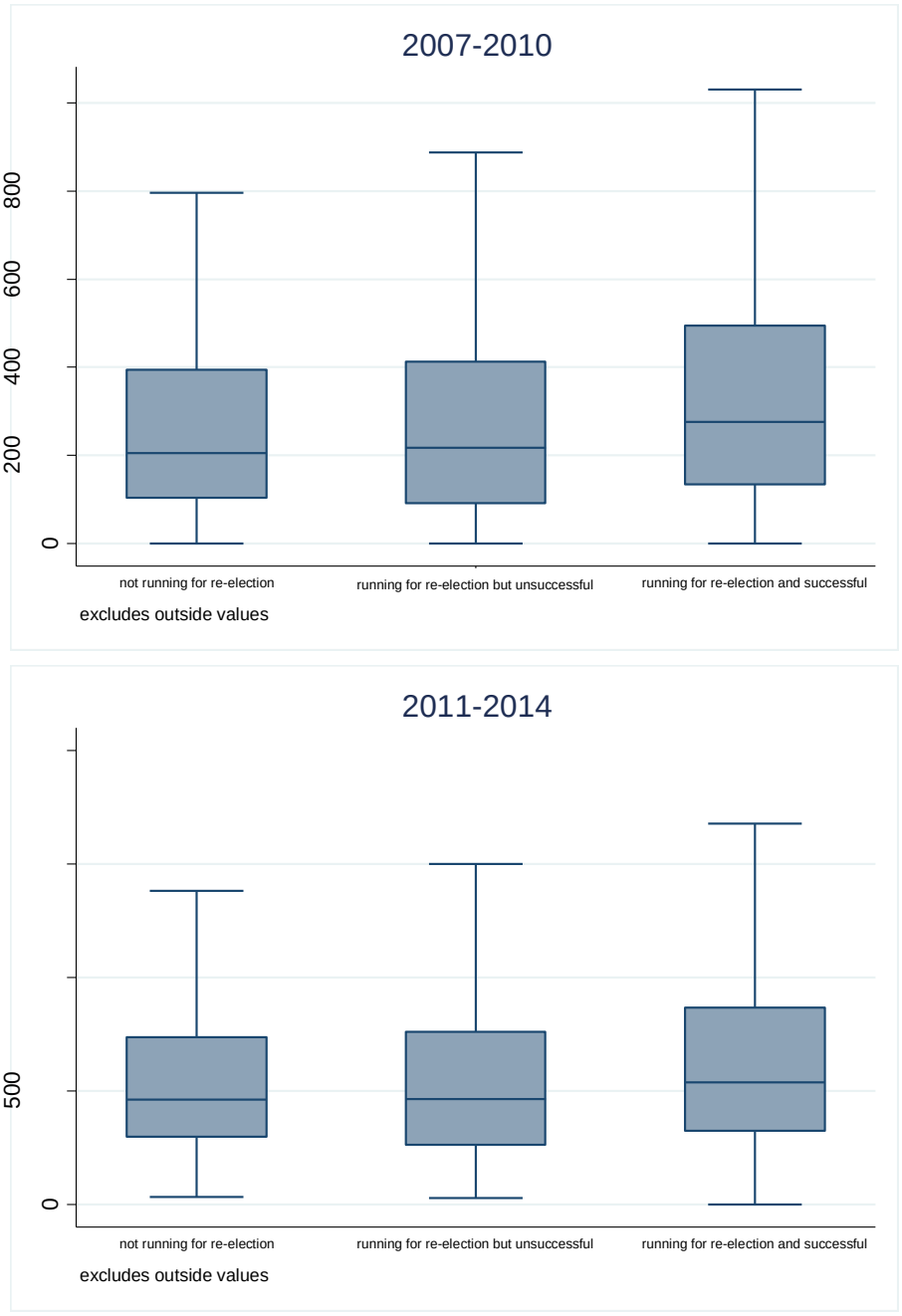

Figure 3. Distribution of term-of-office EU funds per capita according to the political fate of mayor

Source: own elaboration on the basis of Ministry of Finance and National Electoral Commission data.

Table 1. Descriptive statistics of the variables

Variable	Obs	Mean	Standard deviation	Minimum	Maximum
Incumbent mayor's vote share in 1st round of elections	4459	55.850	18.030	7.040	95.510
EU funds per capita spent in term t (ln)	4442	5.823	1.020	-0.360	9.780
EU investment funds per capita spent in term t (ln)	4330	5.479	1.379	-2.726	9.773
EU-related debt/revenues (pre-election yr)	4461	0.024	0.062	0.000	0.692
Other debt/revenues (pre-election yr)	4461	0.229	0.162	0.000	2.590
Government expenditures per capita (election yr; ln)	4461	7.834	0.216	7.331	10.274
Unemployment rate	4438	8.942	3.578	1.783	27.194
Population size (ln)	4461	9.081	0.824	7.197	14.367
Share of young population	4461	19.831	2.416	9.900	31.000
Mayor's age	4461	53.073	7.698	29.000	77.000
Share of pro-EU votes [EU-accession referendum]	4460	67.647	14.071	12.319	91.667
Share of highly educated (2002)	4460	0.068	0.040	0.021	0.415
Share of population economically dependent on agriculture (2002)	4460	0.154	0.113	0.000	0.492
City with county rights	4460	0.027	0.151	0.000	1.000
Human development index (t-4)	4461	34.460	10.127	9.020	87.630

Table 2. Impact of total EU funds on incumbent mayor's vote share in 1st election round (terms-of-office: 2007-2010 & 2011-2014)

	Sample: all municipalities					Sample: fixed mayor-municipality set	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	RE	IV RE	IV RE	IV RE	IV RE	FE	IV FE
	Results						
EU funds per capita spent in term t (ln)	1.557***	0.765	0.452	0.835	0.532	0.529	-0.203
	(0.298)	(2.004)	(1.997)	(2.030)	(2.024)	(0.392)	(1.619)
Overall debt/revenues (pre-election yr)	-5.245***	-4.686**	-4.715**			4.027	4.188
	(1.703)	(2.240)	(2.258)			(3.099)	(3.202)
Debt without EU debt / revenues (pre-election yr)				-5.064***	-5.275***		
				(1.765)	(1.782)		
Government expenditures per capita (election yr; ln)	13.05***	14.57***	14.96***	14.36***	14.72***	12.31***	13.949***
	(1.516)	(4.061)	(4.052)	(4.080)	(4.073)	(2.271)	(4.018)
Unemployment rate	-0.425***	-0.424***		-0.424***		0.244	0.233
	(0.107)	(0.107)		(0.107)		(0.258)	(0.258)
Population size (ln)	-0.501	-0.548	-0.436	-0.510	-0.394	15.67	18.011
	(0.610)	(0.624)	(0.626)	(0.623)	(0.624)	(13.79)	(13.912)
Share of young population	0.874***	0.839***	0.853***	0.850***	0.863***	-0.347	-0.497
	(0.164)	(0.186)	(0.185)	(0.188)	(0.187)	(0.509)	(0.546)
Mayor's age	-0.757***	-0.758***	-0.763***	-0.758***	-0.762***		
	(0.0373)	(0.0374)	(0.0376)	(0.0375)	(0.0376)		
Share of pro-EU votes (EU-accession referendum]	0.0394	0.0346	0.00240	0.0359	0.00382		
	(0.0473)	(0.0491)	(0.0481)	(0.0491)	(0.0481)		
Share of highly educated (2002)	-37.58***	-39.93***	-32.29**	-39.62***	-31.85**		
	(13.04)	(14.33)	(14.17)	(14.18)	(14.02)		
Share of population economically dependent on agriculture (2002)	7.234	6.578	8.526	6.759	8.698		
	(5.602)	(5.876)	(5.833)	(5.927)	(5.884)		
City with county rights	-5.109**	-4.901**	-5.812**	-5.031**	-5.944**		
	(2.401)	(2.471)	(2.463)	(2.479)	(2.470)		
Human development index (t-1)	0.00471	-0.00390	0.0617	-0.00373	0.0619		
	(0.0434)	(0.0485)	(0.0458)	(0.0489)	(0.0462)		
Constant	-24.05*	-29.78	-36.44*	-29.14	-35.64*	-173.0	-11.326***
	(13.92)	(20.04)	(20.00)	(19.82)	(19.79)	(124.8)	(1.235)
Year FE	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	NO	NO
Municipality FE	NO	NO	NO	NO	NO	YES	YES
Mayor affiliation controls	YES	YES	YES	YES	NO	NO	NO
Observations	4,417	4,417	4,439	4,417	4,439	3,077	3,044
Number of code	2,458	2,458	2,465	2,458	2,465	1,547	1,522
R-squared	0.168	0.165	0.159	0.165	0.159	0.374	0.374
	First-stage tests						
Kleibergen-Paap rk Wald F statistic		44.959	45.236	43.965	44.201		40.822
Stock-Yogo max 10% bias		19.93	19.93	19.93	19.93		19.93
Hansen J statistic		0.289	0.406	0.247	0.365		1.404
		(0.591)	(0.524)	(0.619)	(0.546)		(0.236)

Column (1) shows the results of panel RE regression. Columns (2)-(5) show the results of second-stage panel IV RE regressions. Column (6) shows the results of panel FE regression. Column (7) shows the results of second-stage panel IV FE regressions.

Robust standard errors clustered on municipality level in parentheses. Significance levels denoted as: *** p<0.01, ** p<0.05, * p<0.1.

For first-stage panel IV diagnostic tests, p-values in parentheses. Instrumental variables for IV: EU funds availability at regional level, EU funds availability at subregional level.

Table 3. Moderating factors and the variables capturing them

Hypothesis	Moderating factor	variable capturing its effect
H2	Capacity to raise own funds	Ratio of debt (without EU-related debt) to revenues (t – 1)
H3	Human capital endowment	Human development index (t – 4) Share of highly educated (2002)
H4A H4B	Percentage of pro-EU voters in the local electorate	Share of citizens who voted pro EU accession (in 2003)

Table 4. Conditional impact of total EU funds on incumbent mayor's vote share in 1st election round (terms-of-office: 2007-2010 & 2011-2014)

	Debt other than EU debt-to-revenues		Human development index		Share of highly educated population		Share of EU-referendum 'yes' votes	
Variables	(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)
	Second-stage results							
EU funds per capita spent in term t (ln)	-0.561	-0.461	-7.171*	-6.133	-0.670	-0.504	-15.67*	-15.44*
	(2.363)	(2.373)	(4.144)	(4.129)	(3.730)	(3.746)	(8.028)	(8.062)
Interaction: EU funds ...x moderating factor	9.428*	8.998*	0.248***	0.225***	41.33**	41.71**	0.247***	0.243***
	(5.260)	(5.281)	(0.0848)	(0.0841)	(20.86)	(20.94)	(0.0937)	(0.0941)
Overall debt/revenues (pre-election yr)			-6.416**	-6.832***	-6.751**	-7.169***	-5.367**	-5.508**
			(2.526)	(2.537)	(2.710)	(2.733)	(2.607)	(2.630)
Debt without EU debt/revenues (pre-election yr)	-60.96*	-58.74*						
	(31.36)	(31.52)						
Government expenditures per capita (election yr; ln)	13.34***	13.14***	13.15***	12.46**	11.03**	10.53*	13.97**	13.93**
	(4.495)	(4.512)	(4.901)	(4.900)	(5.401)	(5.417)	(5.659)	(5.682)
Unemployment rate	-0.431***		-0.491***		-0.450***		-0.358***	
	(0.107)		(0.111)		(0.110)		(0.113)	
Population size (ln)	-0.414	-0.276	-0.632	-0.450	-0.611	-0.447	-0.183	-0.0837
	(0.630)	(0.630)	(0.643)	(0.640)	(0.654)	(0.652)	(0.639)	(0.637)
Share of young population	0.867***	0.896***	0.875***	0.922***	0.918***	0.961***	0.849***	0.867***
	(0.191)	(0.191)	(0.199)	(0.197)	(0.201)	(0.200)	(0.211)	(0.210)
Mayor's age	-0.732***	-0.740***	-0.601***	-0.603***	-0.600***	-0.602***	-0.750***	-0.758***
	(0.0373)	(0.0374)	(0.0361)	(0.0360)	(0.0361)	(0.0360)	(0.0382)	(0.0382)
Share of pro-EU votes [EU-accession referendum]	0.0422	0.0116	0.0645	0.0305	0.0569	0.0274	-1.391**	-1.394**
	(0.0490)	(0.0481)	(0.0503)	(0.0492)	(0.0496)	(0.0487)	(0.551)	(0.551)
Share of highly educated (2002)	-37.09**	-28.49**	-35.85**	-25.69*	-271.5**	-264.4**	-37.24**	-30.19*
	(14.56)	(14.37)	(14.85)	(14.62)	(122.0)	(122.5)	(15.56)	(15.53)
Share of population economically dependent on agriculture (2002)	7.193	9.446	6.729	9.543	7.029	9.659	7.437	9.206
	(5.923)	(5.874)	(6.068)	(5.998)	(6.034)	(5.991)	(6.124)	(6.109)
City with county rights	-6.057**	-7.057***	-9.215***	-10.04***	-8.471***	-9.665***	-8.395***	-9.182***
	(2.521)	(2.510)	(2.724)	(2.725)	(2.685)	(2.691)	(2.623)	(2.586)
Human development index (t-4)	0.00761	0.0783	-1.394***	-1.180**	0.0259	0.105**	0.0246	0.0823*
	(0.0508)	(0.0481)	(0.484)	(0.478)	(0.0530)	(0.0498)	(0.0518)	(0.0499)
Constant	-16.19	-21.21	17.11	8.848	-4.614	-8.897	64.39*	58.89*
	(22.38)	(22.37)	(25.46)	(25.27)	(22.32)	(22.35)	(34.56)	(34.86)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Mayor affiliation controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	4,417	4,439	4,417	4,439	4,417	4,439	4,417	4,439
Number of code	2,458	2,465	2,458	2,465	2,458	2,465	2,458	2,465
R-squared	0.163	0.159	0.150	0.150	0.162	0.157	0.137	0.134

First-stage diagnostic tests								
Kleibergen-Paap Wald F statistics	17.683	17.685	18.479	18.472	12.476	12.508	9.300	9.263
Stock-Yogo max 10% bias	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56
Anderson-Rubin Wald test							(0.026)	(0.032)
Stock-Wright LM S statistic							(0.024)	(0.029)
Hansen J statistic	0.241	0.602	2.328	3.552	1.979	3.221	0.001	0.140
	(0.886)	(0.740)	(0.312)	(0.169)	(0.3720	(0.200)	(0.999)	(0.932)

Table shows the results of panel RE regression for sample: all municipalities.

Robust standard errors clustered on municipality level in parentheses. Significance levels denoted as: *** p<0.01, ** p<0.05, * p<0.1.

For first-stage panel IV diagnostic tests, p-values in parentheses. Instrumental variables: availability of EU funds at subregional level, alignment with regional government and their interactions with exogenous variables that are hypothesized to moderate the effect.

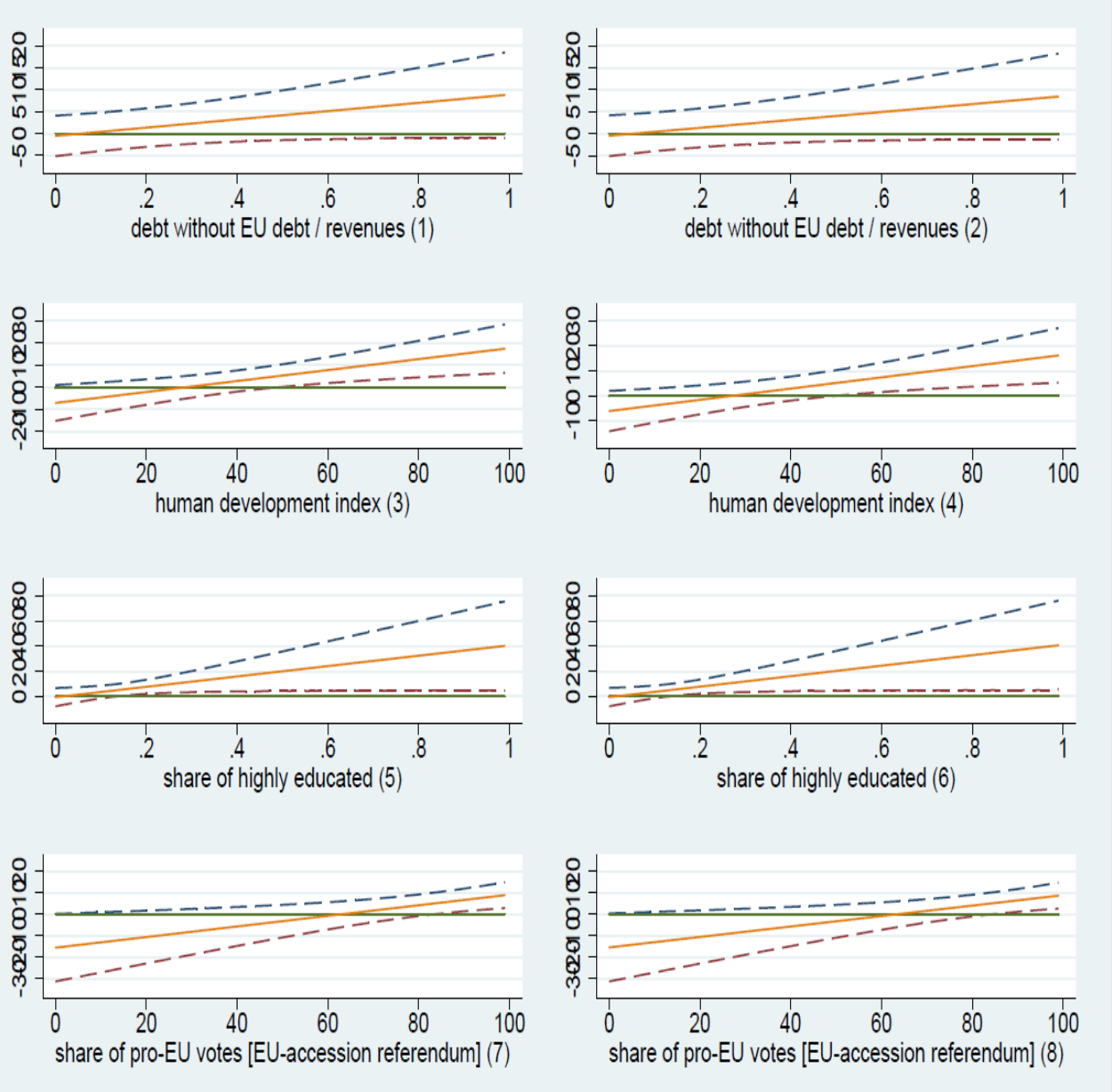

Figure 4. Conditional effects of total EU funds on the vote share in first round
Dashed lines represent 95% confidence intervals. Numbers in brackets correspond to columns in table 4.

APPENDIX

Table A.1. Data description and data sources

Variable	Description	Source
Incumbent mayor's vote share in 1st round of elections	Share of votes obtained by incumbent mayor	National Electoral Commission
EU funds per capita spent in term t (ln)	Expenditures recorded with 4th paragraph digit 1, 5, 7 and 8, measured in constant prices	Ministry of Finance database
EU investment funds per capita spent in term t (ln)	Investment expenditures recorded with 4th paragraph digit 1, 5, 7 and 8, measured in constant prices	Ministry of Finance database
EU-related debt/revenues (pre-election yr; ln)	Debt recoded as EU-related debt to revenues	Ministry of Finance database
Other debt/revenues (pre-election yr)	Debt recoded as EU-related debt to revenues	Ministry of Finance database
Government expenditures per capita (election yr; ln)	Total municipal expenditures; measured in constant prices	Ministry of Finance database
Unemployment rate	Share of unemployed in population at working age	Central Statistical Office Local Data Bank
Population size (ln)	Number of inhabitants according to actual place of abode	Central Statistical Office Local Data Bank
Share of young population	Share of population under the age of 18	Central Statistical Office Local Data Bank
Mayor's age	Mayor's age in years	National Electoral Commission
Share of pro-EU votes [EU-accession referendum]	Share of 'yes' votes in 2003 accession referendum	National Electoral Commission
Share of highly educated (2002)	Share of population with tertiary education in population above the age of 25; National Census data	Central Statistical Office Local Data Bank
Share of population economically dependent on agriculture (2002)	Share of population dependent on agriculture including workers and dependents; National Census data	Central Statistical Office Local Data Bank
City with county rights	Dummy variable: 1 – city with county right status, 0 – otherwise	Central Statistical Office Local Data Bank
Human development index (t-4)	Index from 0 to 100, with 100 as the maximum level of HDI, measured at county level	MojaPolis website

Table A.2. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Incumbent mayor's vote share in 1st round of elections (1)	1.0000													
EU funds per capita spent in term t (ln) (2)	0.0902	1.0000												
EU investment funds per capita spent in term t (ln) (3)	0.0843	0.9039	1.0000											
EU-related debt/revenues (pre-election yr) (4)	-0.0083	0.3022	0.2513	1.0000										
Other debt/revenues (pre-election yr) (5)	-0.1058	0.0963	0.0746	-0.0906	1.0000									
Government expenditures per capita (election yr; ln) (6)	0.1510	0.4082	0.3512	0.0884	0.0255	1.0000								
Unemployment rate (7)	-0.0461	0.0699	0.0631	-0.0167	-0.0221	0.0569	1.0000							
Population size (ln) (8)	-0.1602	-0.1387	-0.1075	-0.0068	0.2233	-0.0648	-0.1894	1.0000						
Share of young population (9)	0.1881	-0.1599	-0.1205	-0.1138	-0.1308	0.0488	0.0268	-0.1771	1.0000					
Mayor's age (10)	-0.2520	-0.0137	-0.0032	-0.0269	-0.0369	-0.0107	0.0004	0.0426	0.0112	1.0000				
Share of pro-EU votes [EU-accession referendum] (11)	-0.1046	-0.0251	-0.0179	0.0534	0.2241	0.1091	0.0396	0.4579	-0.2497	0.0448	1.0000			
Share of highly educated (2002) (12)	-0.1649	-0.0636	-0.0668	0.0258	0.2321	0.1242	-0.1963	0.7160	-0.2700	0.0458	0.4746	1.0000		
Share of population economically dependent on agriculture (2002) (13)	0.1289	0.0444	0.0467	-0.0454	-0.2350	-0.0400	0.0265	-0.5807	0.1937	-0.0293	-0.8016	-0.6137	1.0000	
City with county rights (14)	-0.0833	0.0801	0.0654	0.0583	0.0952	0.2627	-0.0995	0.5424	-0.2161	0.0365	0.1888	0.4440	-0.2180	1.0000
Human development index (t-4) (15)	-0.0621	0.0109	-0.0249	0.0899	0.1854	0.1023	-0.4419	0.4135	-0.0980	0.0581	0.3436	0.4400	-0.4329	0.3034

Table A.3 Probit Regressions explaining the decision of the incumbent mayor to run for office again (terms-of-office: 2007-2010 & 2011-2014)

	(1)	(2)
Vote share in previous election		0.001***
		(0.000)
EU investment funds per capita spent in t (ln)	(0.008	0.007
	(0.005)	(0.005)
EU-related debt/own revenues (pre-election yr)	-0.081	-0.080
	(0.067)	(0.067)
Other debt/own revenues (pre-election yr)	-0.029	-0.028
	(0.027)	(0.028)
Government expenditures per capita (election yr; ln)	0.079**	0.077**
	(0.035)	(0.035)
Unemployment rate	0.002	0.002
	(0.002)	(0.002)
Population size (ln)	0.019*	0.020*
	(0.010)	(0.010)
Share of young population	-0.003	-0.003
	(0.002)	(0.002)
mayor's age	-0.011***	-0.011***
	(0.001)	(0.002)
Share of pro-EU votes [EU-accession referendum]	-0.001	-0.001
	(0.001)	(0.001)
Share of highly educated (2002)	0.064	0.098
	(0.201)	(0.201)
Share of population economically dependent on agriculture (2002)	0.122	0.119
	(0.082)	(0.081)
City with county rights	-0.033	-0.036
	(0.039)	(0.039)
Human development index (t-1)	0.001	0.001
	(0.001)	(0.001)
Year FE	Yes	Yes
Regional FE	Yes	Yes
Mayor Affiliation controls	Yes	No
Observations	4908	4908
Number of code	2472	2472
Wald χ^2	95.43***	89.56***

Table shows the results of panel probit RE regressions. Robust standard errors in parentheses. Significance levels denoted as: *** p<0.01, ** p<0.05, * p<0.1.