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# Political alignment and the allocation of the COVID-19 response funds—evidence from municipalities in Poland<sup>1</sup>

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**Abstract:** This paper aims to analyse the allocation of the COVID-19 response funds from the perspective of the political alignment hypothesis. The authors focus on the allocation of the second and third rounds of the Governmental Fund for Local Investments (part of the COVID-19 Response Fund) in Poland. Using the logit and OLS models and the regression discontinuity design the authors show that mayors aligned with the central government were significantly more likely to receive the funds, as well as in higher per capita values, than mayors aligned with the opposition or unaligned with any party in parliament when the allocation was based on a discretionary decision. The results support the political alignment hypothesis and highlight the danger of partiality in the allocation of the COVID-19 response funds.

**Keywords:** political alignment, COVID-19 response funds, public spending.

**JEL codes:** D72, H54.

## Introduction

A decrease in local governments' own revenue is an inevitable side effect of the COVID-19 pandemic. Local governments are very important public investors and public investments are one of the basic tools that can be used to deal with the economic crisis. Therefore central governments decided to increase trans-

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fers to the local governments in the aftermath of the COVID-19 pandemic in many countries (Rahim, Allen, Barroy, Gores, & Kutzin, 2020). The traditional view on intergovernmental transfers is that these are motivated by efficiency and equity considerations (Musgrave, 1959; Oates, 1972; Gramlich, 1977). From a political economy perspective, however, it is hard to believe that central governments—either because of their preferences or institutional and political constraints—behave as a benevolent social planner would. The political alignment hypothesis states that politicians discriminate in favour of politically aligned recipients (Migueis, 2013). Therefore more funds are allocated to states, districts or municipalities run by administrations linked to the central government. Many empirical studies provide support for this hypothesis (Grossman, 1994; Levitt & Snyder, 1995; Solé-Ollé & Sorribas-Navarro, 2008; Migueis, 2013). In the Polish context political alignment was indicated as an important factor in the allocation of the EU funds (Banaszewska & Bischoff, 2017) and the Local Government Roads Fund (Swianiewicz, 2020). However, the key question remains about the political alignment hypothesis and the allocation of the COVID-19 response funds.

This study contributes to the literature on the political alignment hypothesis by analysing the allocation of the COVID-19 response funds from the central to local governments concerning the political affiliation of the rulers. Specifically, the allocation of the Governmental Fund for Local Investments (GFLI; part of the COVID-19 Response Fund) to Polish municipalities is analysed. This analysis is particularly well-suited to investigate the political alignment hypothesis for two reasons. First, there is considerable heterogeneity in terms of the political affiliation of Polish mayors—most of them are unaffiliated with parties in parliament, around one-fifth are aligned with the parties constituting the Opposition in the central government, while 13% are aligned with the ruling Coalition. This allows for the comparison of the allocation of funds between three groups of municipalities—not only for those governed by mayors affiliated with the Coalition or Opposition, but also those unaffiliated. Second, the allocation of funds in the first round of the GFLI was based on the algorithm, while in the second and third rounds—on the discretionary decision of the commission appointed by the prime minister. Therefore, the results of the first round can serve as a benchmark in the absence of the political alignment factor. Moreover, the allocation of funds in the second round of the GFLI was broadly discussed in Polish media, and many commentators emphasised that municipalities aligned with the ruling Coalition were favoured.<sup>5</sup>

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<sup>5</sup> Flis and Swianiewicz (2021) published the report in which they presented the analysis of the allocation with the use of descriptive statistics and described political alignment as the 'dominant feature of the funds distribution'. Sześciło, Gąsiorowska, Łapszyński and Zakroczyński (2020) argued that the party affiliation was more important than financial or investment needs of the municipalities. Moreover, they indicated that municipalities in the prime minister's constituency were particularly favoured.

This allows investigating whether public monitoring might be a factor limiting the bias due to political alignment.

The study revealed that the allocation of the second and third rounds of the GFLI was strongly biased in favour of the municipalities governed by mayors aligned with the party ruling in the central government. The Coalition municipalities were more than three times more likely to receive the second round funds than the municipalities governed by the Opposition mayors and nearly twice more likely than mayors unaligned with any party present in parliament. These differences in the probability of receiving funds were only slightly smaller but still significant—despite the broad discussion in media—in the third round. Municipalities ruled by mayors aligned with the ruling coalition received also substantially larger per capita funds in the second round, even when the analysed set was limited to the recipients of funds. What is important is that these results hold when the regression discontinuity design (RD) is employed. This shows that it is very unlikely that the identified discrepancies are driven by some systematic differences between analysed groups of municipalities which were not controlled for. Therefore the results provide sufficient evidence to indicate that allocation of the COVID-19 recovery funds in Poland was substantially biased in favour of politically-aligned municipalities which supports the political alignment hypothesis and highlights the danger of partiality in the allocation of the post-pandemic response funds.

The paper is structured as follows. Section 1 reviews the literature on the distribution of intergovernmental grants or transfers from a political alignment perspective. Section 2 introduces the institutional background. Section 3 presents the data and empirical strategy. Section 4 presents and discusses the results. The last section concludes.

## **1. Literature review**

According to the traditional approach the distribution of intergovernmental grants or transfers might be explained by equity and/or efficiency criteria (Musgrave, 1959; Oates, 1972; Gramlich, 1977). However, from a political economy perspective, it is widely accepted that politicians allocate transfers and grants for the purpose of enhancing their re-election chances, rewarding areas where their party won the elections, pleasing core supporters or attracting swing voters. Results of a number of empirical studies emphasise the importance of tactical redistribution and using intergovernmental transfers to pursuing political objectives.

Two main hypotheses that shaped the early literature on distributive politics are: the core voters hypothesis and the swing voters hypothesis. The grant donor may target his supporters (i.e., core voters) but may also favour voters who are not ideologically committed (i.e., swing voters) if he/she is not risk-averse in the

allocation of funds. The core voter hypothesis developed by Cox and McCubbins (1986) posits that the central government transfers more funds to constituencies where the party in power enjoys significant and certain support. According to the competing hypothesis proposed by Lindbeck and Weibull (1987) transfers go to states, municipalities or districts where there is tighter competition between political parties during electoral campaigns. Those hypotheses were verified by many studies. Recently Kauder, Potrafke and Reischmann (2016) verified the core voter hypothesis and showed that using data on discretionary project grants from a German state government to municipalities over the period 2008–2011 discretionary grants were awarded to municipalities with many core supporters of the incumbent state government. In the Polish context Banaszewska and Bischoff (2017) verified the swing voter hypothesis and by using data about the allocation of EU transfers showed that EU funds per capita are a decreasing function of the vote-share differential between the two leading parties.

In this paper another hypothesis which was put forward in the literature was examined: the possibility that political alignment per se (between central and local governments) increases transfers to local governments. The political alignment hypothesis states that politicians discriminate in favour of politically aligned recipients (Migueis, 2013). They prefer to fund areas where their party has political control. Consequently it can be expected that the political alignment between the central and lower tiers of governments will increase the value of transfers received by local governments. The difference between the political alignment hypothesis and the core voters hypothesis is that central government politicians are not simply trying to reward the areas where they receive high support but instead prefer to fund constituents where they have political control regardless of the winning margin. There are several reasons why politicians in central government could act this way. Central government leaders want local leaders to be loyal and motivated to achieve party goals (Migueis, 2013). The loyalty of local party leaders can be very important in ensuring the re-election of national party leaders (Brollo & Nannicini, 2012). Motivated local party leaders can be an important asset in the campaign ahead of the national elections. The gratitude of local leaders can be increased by transferring funds to friendly and aligned local governments. Additional funds allow local leaders to accomplish more for their constituents and thus increased transfers from the central government may help them win the election again (Sakurai & Menezes-Filho, 2008). Usually these transfers are used to finance highly visible projects (such as a swimming pool or sports hall), that is they are an ideal target for politicians willing to woo voters (Aidt, Veiga, & Veiga, 2011). Moreover national party leaders do not want to help the local opposition party leaders and therefore concentrate funds in the municipalities where all the credit goes to the party ruling in parliament (Ahmad, 2021). They may also want to punish those municipalities where the opposition party won local elections (Diaz-Cayeros, Magaloni, & Weingast 2006). Also winning in local elections may

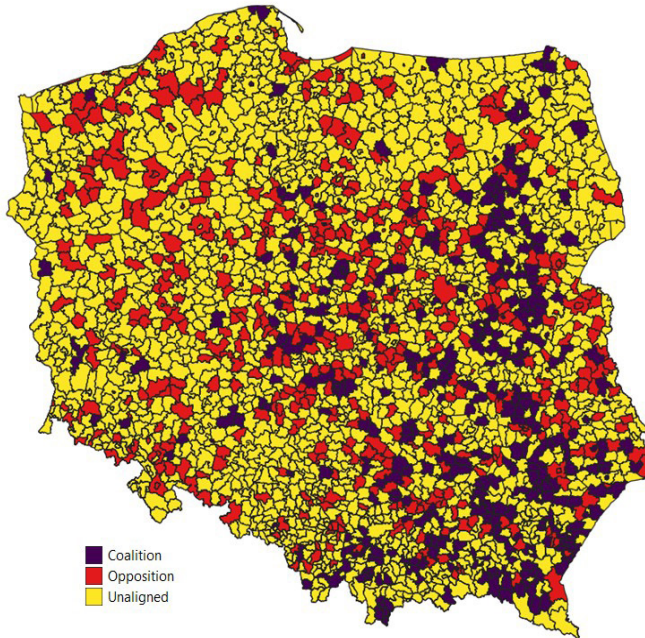
contribute to success in national elections if success in local elections provides momentum for the party in those national elections (Migeuis, 2013). Finally central government leaders privilege aligned municipalities because aligned local leaders share the ideological, social and economic priorities of the ruling party and therefore favour investment projects and current spending in line with the central government goals (Migeuis, 2013).

Many studies verified the political alignment hypothesis empirically (Grossman, 1994; Levitt & Snyder, 1995; Hanes, 2007; Golden & Picci, 2008; Solé-Ollé & Sorribas-Navarro, 2008; Arulampalam, Dasgupta, Dhillon, & Dutta, 2009; Berry, Burden, & Howell, 2010; Bouvet & Dallerba, 2010; Dellmuth & Stoffel, 2012; Veiga, 2012; Migueis, 2013; Muraközy & Telegdy, 2016; Curto-Grau, Sole-Olle, & Sorribas-Navarro, 2018; Kleider, Röth, & Garritzmann, 2018). Recently Lara and Toro (2019) showed that political alignment is a factor considered in the distribution of funds in Chile. FerreiraAlves and Caldeira (2021) indicated that alignment between the municipal and federal chief executives is crucial for the allocation of grants in Brazil. This hypothesis was also supported by the results in Jacques and Ferland (2021) that showed that politically aligned districts received more funds for infrastructural projects in Canada. Clemens and Veuger (2021) investigated the federal support for state and local governments during the COVID-19 pandemic in the United States and showed that alignment with the Democratic party predicts increases in states' allocations through legislation designed after the January 2021 political transition. Jarocinska (2022) found evidence that grants were biased in favour of the regions where there was partisan alignment between the central and regional layers of government during the PSOE (Partido Socialista Obrero Español) rule. In the Polish context Banaszewska and Bischoff (2017) revealed, using data about the allocation of EU funds, that donor governments discriminated in favour of politically aligned local governments while Swianiewicz (2020) verified this hypothesis using data on the assignment of funds from the Local Government Roads Fund.

## **2. Institutional background**

Municipalities are the lowest-tier and most relevant element of the Polish three-tier local government system in terms of revenue and expenditure. The executive power in Polish municipalities is held by the mayor and municipal council, however, wide executive power is granted to the former who has the sole right to submit a budget proposal. The mayor and municipal council are directly elected by local residents. Elections are held every four years in all municipalities simultaneously. Municipalities' expenditure is financed from their own revenues (around 30%) and grants from the central budget (around 70%) (Banaszewska & Bischoff, 2020).

Polish municipalities are peculiar because a majority of mayors remain unaffiliated with any party and Poland is an outlier in this respect in Europe (Gendźwiłł & Żóltak, 2014). Currently out of 2,477 municipalities, 1,643 mayors (66.33%) are unaffiliated with the parties present in parliament, 501 (20.23%) mayors are aligned with the Opposition and 333 (13.44%) mayors are aligned with the Coalition (see Figure 1 and Appendix for details of the classification).



**Figure 1. Mayors' affiliations in Poland, December 2020**

Source: Own elaboration with QGIS based on data from the National Electoral Commission.

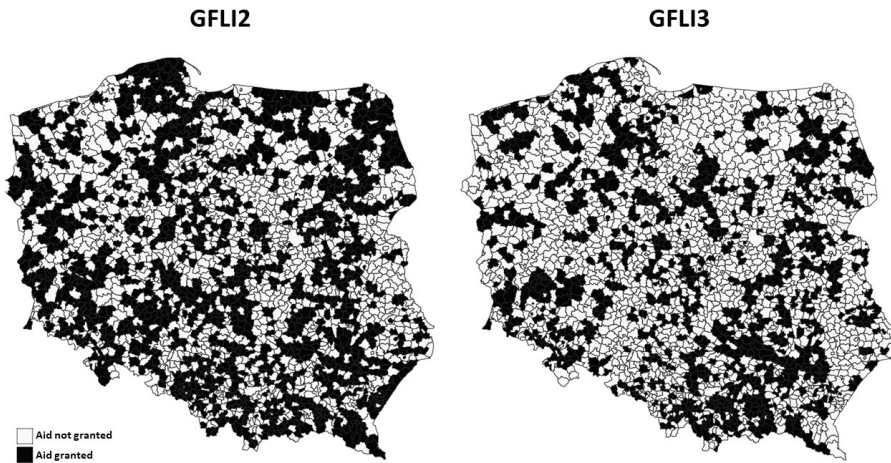
Figure 1 presents the distribution of mayors according to party alignment—most Coalition mayors rule in municipalities in the eastern part of the country while the distribution for the Opposition mayors seems to be more even across Poland.

The Governmental Fund for Local Investments (GFLI, Rządowy Fundusz Inwestycji Lokalnych) was launched based on the Resolution of the Council of Ministers to support investments conducted by local governments. GFLI resources—over 12 billion PLN (2.73 billion EUR)—are funded by the COVID-19 Response Fund and municipalities constitute the vast majority of beneficiaries. In the first round (GFLI1, August 2020) all 2,477 municipalities were granted PLN 5 billion in total according to the rule-based algorithm.



In the second round (GFLI2, December 2020) 1,189 (48%) municipalities received total funds of PLN 3.1 billion. In the third round (GFLI3, March 2021), 856 (34.6%) municipalities were granted PLN 1.25 billion (see also Figure 2).<sup>6</sup>

The geographical distribution of grants in the second and third rounds of the GFLI is presented in Figure 2.



**Figure 2. Geographical distribution of aid in the second and third rounds of the GFLI**

Source: Own elaboration based on (PAP, 2021).

The analysis of the second- and third-round GFLI funds is particularly well-suited to the study of the party alignment hypothesis as their allocation depended on the discretionary assessment of the commission appointed by the Prime Minister. Moreover, these funds are definitely non-negligible from the perspective of municipality budgets. In the GFLI2 their values ranged from PLN 400 thousand to PLN 36.98 million and on average these funds corresponded to 5.5% of total revenues and 51.3% of capital expenditures of municipalities in 2019.<sup>7</sup> In the GFLI3 municipalities received between PLN 200 thousand to PLN 20.04 million and the granted funds corresponded to 3.4% of total revenues and 31.7% of capital expenditures on average.

<sup>6</sup> The GFLI included two more rounds with the allocation of PLN 672 million (GFLI4) and PLN 341 million (GFLI5). Nevertheless, an analysis of these rounds was not conducted because they were dedicated only to specific groups of municipalities—mountain municipalities (GFLI4) and municipalities with former state agricultural farms (GFLI5).

<sup>7</sup> The allocation of the second-round GFLI funds—with the use of simple descriptive statistics—was previously discussed in a report by Flis and Swianiewicz (2021).

The summary of the distribution of the GFLI funds concerning political affiliation is presented in Tables 1 and 2.

**Table 1. GFLI funds by political affiliation, shares of municipalities with aid granted**

	GFLI1 (%)	GFLI2 (%)	GFLI3 (%)
Coalition	100	86	56
Opposition	100	24	22
Unaligned	100	48	34

Notes: The % values show the share of municipalities receiving funds within a particular group, for instance, 86% means that 288 out of 333 municipalities ruled by mayors aligned with the Coalition received the funds in the GFLI2.

Source: Own elaboration based on data from voivodeships offices.

**Table 2. GFLI funds by political affiliation, sums in PLN (shares in total)**

	GFLI1 (%)	GFLI2 (%)	GFLI3 (%)
Coalition	465 429 823 (9.31)	845 848 763 (27.47)	287 635 571 (22.93)
Opposition	1 539 948 109 (30.8)	313 935 109 (10.2)	186 360 142 (14.86)
Unaligned	2 994 575 712 (59.89)	1 918 880 445 (62.33)	780 483 669 (62.22)

Source: Own elaboration based on data from voivodeships offices.

According to data presented in Table 1 all municipalities were granted aid in the first round. However, in the GFLI2 and GFLI3 it can be easily seen that the shares of municipalities that were granted the funds were considerably larger in the group of the Coalition municipalities (86% and 56%, respectively) as compared to the remaining groups (24% and 22% for Opposition, 48% and 34% for unaligned). A similar pattern can be recognised in terms of the values of the granted funds (see Table 2) with the Coalition municipalities receiving disproportionately large sums in the GFLI2 and GFLI3 as compared to the GFLI1 which was allocated according to the rule-based algorithm (27.5% and 22.9% versus 9.3%).

The following sections aim at investigating whether the discrepancies observed in this simple comparison hold when a set of control variables is considered as well as when the focus is on municipalities with close elections within the regression discontinuity framework.

### 3. Data and empirical strategy

The dataset includes all 2,477 municipalities. The independent variable of interest is the mayor's affiliation—whether (s)he was proposed/supported in the elections by the national committee and/or was a member of a party of the *Coalition* or *Opposition* or was *Unaligned*, that is independent from national political parties in the (last) mayoral 2018 elections. Mayors' affiliations were based on data from the National Electoral Commission (PKW, 2018). Variables description and sources are presented in Table A1.

In the first steps of the empirical analysis the questions as to whether municipalities governed by the Coalition mayors were more likely to receive the funds and, given that they were beneficiaries, whether the Coalition municipalities received higher per capita values of the funds are asked. To address these questions the logit and OLS models are used. The dependent variable in the former is the fact of receiving GFLI funds in a given round. In the latter per capita GFLI funds as a dependent variable are used and only those municipalities that received funds are included.<sup>8</sup> In the basic specification models control for the municipality type (urban, rural and urban-rural), population size and municipalities' revenue from personal income tax (per capita) as a measure of the income level as well as for fixed effects for sixteen voivodeships. Next the fixed effects for 380 counties are included which allows controlling for a large part of heterogeneity across municipalities and common shocks at county-level.

The methodological challenge in this study is that municipalities governed by the Coalition mayors may systematically differ from those governed by the Opposition and Unaligned mayors and these differences might not be controlled for even after the inclusion of a broad set of control variables. This issue is addressed in the next step of the analysis by employing the regression discontinuity design (RD) which is a broadly used method in the study of close elections and political alignment (Lee, Moretti, & Butler, 2004; Lee, 2008; Eggers & Hainmueller, 2009; Galasso & Nannicini, 2011; Migueis, 2013; de la Cuesta & Imai, 2016; Cattaneo, Idrobo, & Titiunik, 2019). The local causal effect of political alignment on the distribution of COVID-19 response funds is assessed by comparing municipalities in which the Coalition candidates received slightly more or less than 50% of votes in the 2018 elections. In Polish municipalities mayors are chosen directly in local elections which might consist of two

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<sup>8</sup> The Tobit model was also estimated to calculate the conditional expectation (given that a municipality received funds) on per capita funds and the results suggested that Coalition municipalities received nearly ten times higher per capita funds than Unaligned municipalities and nearly 25 times higher than Opposition municipalities. These large discrepancies are likely to be driven by the fact that conditional expectations in the Tobit model are influenced by the fact of receiving the funds and therefore, with large discrepancies between politically-(un)aligned municipalities, the estimated differences might be too large. Results are available upon request.

rounds of voting—the second round of voting takes place when none of the candidates obtains more than 50% of the votes in the first round and the two candidates with the highest number of votes start in the second round. This is why the threshold which distinguishes between elected and non-elected candidates is set at 50%. In the RD analysis the vote shares for the Coalition candidates with the highest number of votes in the final round of the elections are included (that is from the second round of the elections unless a candidate received more than 50% in the first round).<sup>9</sup>

The RD approach relies on the assumption that the probability of receiving GFLI funds changes smoothly around the 50% threshold from the previous elections in the absence of the impact of political alignment on the distribution of the GFLI and no pre-existing discontinuous differences. The latter is tested by conducting the RD analysis of the excess mortality in 2020 as a measure of the severity of the pandemic, municipalities' revenue from personal income tax (per capita) and average luminosity as measures of economic development. No substantial discontinuities were found for these factors at the 50% threshold (see Table A2). Additionally the per capita funds received in the first round of the GFLI are used as a placebo treatment—the first round was distributed based on an algorithm and did not depend on a discretionary decision of the central government. The results show that there were no significant discontinuities at the analysed threshold (see Table A2). These results show that it is unlikely that potential discontinuities in the analysis of the second- and third-GFLI rounds are driven by confounding factors—that is other than political alignment—and support this RD approach.<sup>10</sup>

More formally in the RD analysis the units are municipalities and the score is the vote share of the Coalition candidate in the latest local elections. The treatment is the fact of being aligned with the Coalition (vs Opposition and Unaligned) and the cut-off is set at 50%.<sup>11</sup> As the treatment condition assigned is identical to the treatment condition actually received the sharp RD design is employed. A local average treatment effect of being aligned with the Coalition on the probability of receiving GFLI funds and per capita funds (given that a municipality received funding in a given round) is analysed by employing a local polynomial approach in which the unknown regression functions are approximated by a polynomial function of the vote shares and only for mu-

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<sup>9</sup> Municipalities in which both candidates with the highest vote shares were aligned with the Coalition were excluded from the analysis (fifteen municipalities).

<sup>10</sup> Manipulation testing using local polynomial density estimation was performed and results showed that there were no significant discontinuities in the number of observations in the close neighbourhood of the cut-off.

<sup>11</sup> The Opposition and Unaligned municipalities were jointly considered in the RD analysis because of the relatively low number of the Opposition municipalities near the cut-off: there were fourteen Opposition, 46 Unaligned and 80 Coalition municipalities in the 45-55% Coalition votes range from the latest elections.

municipalities in which the Coalition candidate received around 50% of votes. Indications by Cattaneo and others (2019) are followed and a linear approximation in the basic specification is employed. Linear weighted regression fits are implemented separately for Coalition and remaining municipalities and point estimates are calculated as the difference between intercepts from both regression. The triangular kernel function is used in the basic specification, i.e., municipalities closer to the 50% threshold receive larger weights than those with higher vote margins. The selection of (asymmetric) bandwidths is based on the data-driven approach by Calonico, Cattaneo and Titiunik (2015) which minimizes the mean squared error of the local polynomial RD point estimator. The variance-covariance estimator is constructed using heteroskedasticity-robust nearest-neighbour estimators. Robust bias correction for constructing p-values and confidence intervals is used.

#### 4. Results and discussion

Table 3 presents the results of the logit and OLS analyses for the second and third rounds of the GFLI. The coefficients by the variable representing the alignment between a mayor and the parliamentary Coalition were positive and significant at the 1% significant level for both logit and OLS models for round 2. This shows that municipalities ruled by the Coalition mayors were more likely to receive second round GFLI funds and—given that the funds were granted—in a higher per capita value as compared to Unaligned mayors. At the same time municipalities ruled by the Opposition mayors were less likely to receive the second round funds than Unaligned mayors and this relationship was statistically significant at the 1% level. Even when the funds were granted for the Opposition municipalities their per capita values were lower than in Unaligned municipalities (at the 5% significance level). To assess the economic significance of these results the average adjusted predictions for the *Coalition*, *Opposition* and *Unaligned* variables were calculated. They show that—given all other variables—the estimated probabilities of receiving second round funds by municipalities ruled by the Coalition mayors were 88.1% and 90.0% (depending on specification). For the Opposition mayors these values equalled 24.9% and 24.6% while for Unaligned mayors: 46.4% and 46.6%. All differences between the analysed groups were significant at the 1% level. Estimated per capita values were equal to PLN 273.3 and PLN 274.1 for *Coalition*, PLN 169.1 and PLN 169.6 for *Opposition* and PLN 198.9 and PLN 198.6 for *Unaligned*—differences between Coalition and other municipalities were significant at the 1% level.

The lower part of Table 3 presents the results for the third round of GFLI. Similarly to the second round municipalities ruled by Coalition mayors were more likely (53.3–59.1%) to receive funds than Unaligned municipali-

**Table 3. Results—logit and OLS models**

Dependent variable	GFLI granted (1—yes, 0—no)		GFLI per capita (for GFLI > 0)	
Model	Logit		OLS	
<b>GFLI round 2</b>				
Unaligned	ref.	ref.	ref.	ref.
Coalition	2.242	2.811	0.318	0.322
	(0.001)	(0.001)	(0.001)	(0.001)
Opposition	-1.006	-1.199	-0.162	-0.158
	(0.001)	(0.001)	(0.012)	(0.037)
Mun. type, Mun. size, Mun. rev. personal income tax, Intercept	✓	✓	✓	✓
Voivodeship FE	✓		✓	
County FE		✓		✓
Observations	2477	2303 <sup>a</sup>	1189	1189
R <sup>2</sup>	0.134	0.237	0.285	0.379
Average Adjusted Predictions [99% confidence intervals]				
Coalition	88.1%	90%	273.3	274.1
	[83.5-92.7%]	[85.5-94.5%]	[246.2-303.4]	[240.2-312.7]
Opposition	24.9%	24.6%	169.1	169.6
	[20-29.9%]	[19.3-30%]	[145.6-196.4]	[142.4-202]
Unaligned	46.4%	46.6%	198.9	198.6
	[43.3-49.5%]	[43.6-49.6%]	[185.6-213.1]	[184.4-213.9]
<b>GFLI round 3</b>				
Unaligned	ref.	ref.	ref.	ref.
Coalition	0.818	0.992	0.109	0.107
	(0.001)	(0.001)	(0.101)	(0.184)
Opposition	-0.663	-0.797	0.009	0.013
	(0.001)	(0.001)	(0.08)	(0.09)
Mun. type, Mun. size, Mun. rev. personal income tax, Intercept	✓	✓	✓	✓
Voivodeship FE	✓		✓	
County FE		✓		✓

Dependent variable	GFLI granted (1—yes, 0—no)		GFLI per capita (for GFLI > 0)	
Model	Logit		OLS	
Observations	2477	2106	856	856
R <sup>2</sup>	0.072	0.166	0.327	0.429
Average Adjusted Predictions [99% confidence intervals]				
Coalition	53.3%	59.1%	131.9	131.6
	[46-60.6%]	[51.4-66.8%]	[113.7-153.1]	[111.1-156]
Opposition	21.9%	24.7%	119.4	119.9
	[17.3-26.6%]	[19.1-30.3%]	[98.8-144.4]	[96.9-148.5]
Unaligned	34.5%	39%	118.3	118.3
	[31.5-37.5%]	[35.8-42.2%]	[109.3-128.1]	[108.8-128.6]

<sup>a</sup> The inclusion of county fixed effects rules out from the analysis 66 cities with county rights that is large cities, which have both municipal and county competences and 108 observations dropped from the analysis because those were municipalities from counties (305 for round three), in which all municipalities either received or did not receive funds.

Notes: *P*-values based on heteroskedasticity-robust standard errors are reported in parentheses. *Mun.* denotes municipality. *ref.* denotes a reference group. *FE* denotes fixed effects. *R*<sup>2</sup> is pseudo-*R*<sup>2</sup> for the logit model and adjusted *R*<sup>2</sup> for OLS. In the OLS model, only municipalities with funds granted in a given round are included and values are given in Polish zloty (PLN). *Average Adjusted Predictions* for OLS are presented after exponential transformation of log dependent variables. Data description presented in Table A1.

Source: Own elaboration.

ties (34.5–39%) while those ruled by the Opposition mayors—less likely (21.9–24.7%). Differences in estimated probabilities were significant at the 1% level. However, there were no significant differences in terms of the value of par capita funds (given that the funds were granted).

Table 4 presents the results of the analysis employing the regression discontinuity design. The RD estimate shows that there was a significant (at the 1% level) discontinuity at the cut-off in terms of the probability of receiving the second round GFLI funds and the estimated probabilities at the 50% votes threshold were 87.0% for Coalition and 36.5% for Opposition and Unaligned. There was also a significant discontinuity (at the 10% level) in the per capita value for round 2 and the estimated values were equal to PLN 239 for Coalition and PLN 130 for Opposition and Unaligned.<sup>12</sup>

As Table 4 indicates the RD estimate was also statistically significant (at the 10% level) when the probability of receiving the third round GFLI funds

<sup>12</sup>  $\exp(5.475) = 239$ .  $\exp(4.869) = 130$ .

**Table 4. Results—RD analysis**

	Dependent variable							
	GFLI granted (1—yes, 0—no)				GFLI per capita (for GFLI > 0)			
	RD estimate ( <i>p</i> -value)	Estimate at the cut-off	N	Bandw.	RD estimate ( <i>p</i> -value)	Estimate at the cut-off	N	Bandw.
	<b>Round 2</b>							
Coalition	0.506 (0.001)	0.870	118	9.332	0.606 (0.092)	5.475	112	10.726
Opposition, Unaligned		0.365	136	11.001		4.869	51	14.813
	<b>Round 3</b>							
Coalition	0.256 (0.054)	0.511	123	9.955	0.202 (0.547)	4.976	68	8.781
Opposition, Unaligned		0.255	190	15.74		4.774	57	15.272

Note: *RD estimate* is a bias-corrected local-polynomial RD estimate. *Estimate at the cut-off* is a bias-corrected (linear) local-polynomial estimate to the right (for *Coalition*) and left (for *Opposition* and *Unaligned*) of the cut-off. *Bandw.* are data-driven, asymmetric MSE-optimal bandwidths. *GFLI per capita* is per capita value (in PLN) after logarithmic transformation. *p-value* is based on heteroskedasticity-robust standard errors. Calculations were conducted with *rdrobust* R-package by Calonico and others (2015).

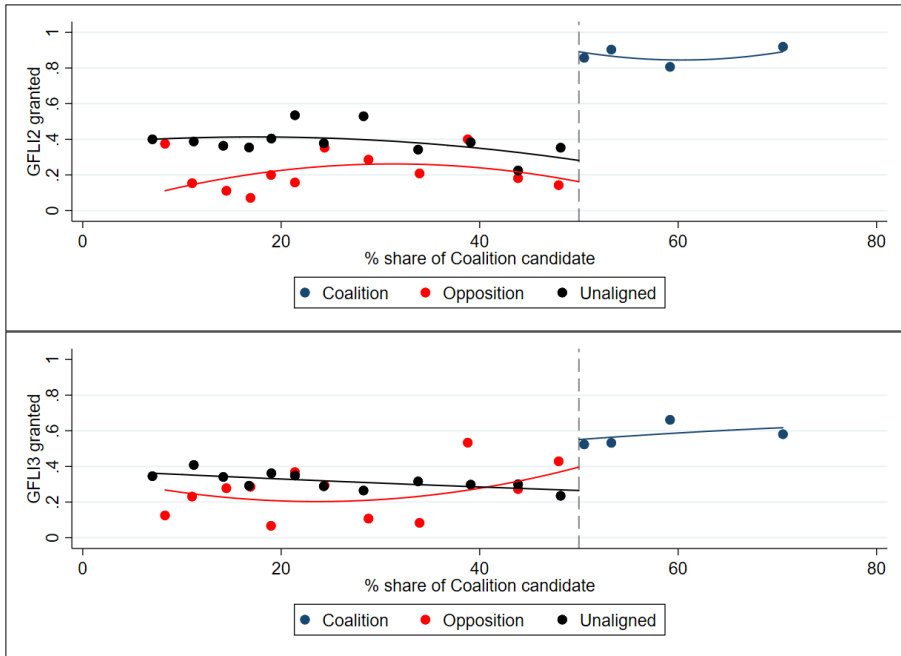
Source: Own elaboration.

was analysed. Estimates at the cut-off were 51.1% for Coalition and 25.5% for Opposition and Unaligned. However there were no significant discontinuities in per capita values of round 3 between the analysed groups.

The outcomes of the logit and OLS models cannot be interpreted as causal relationships because of potential confounding factors which possibly were not controlled for, while the estimated effect in the RD analysis is local at the 50% votes threshold. Nevertheless these analyses lead to very similar conclusions and the relationship between the probability of receiving the GFLI funds and political affiliation seems to be rather stable across the different levels of support for the Coalition candidate in the latest elections (see Figure 3). Thus it is admissible to extrapolate the estimated local effects on both sides of the threshold to the higher/lower levels of the support for the Coalition candidate in the latest elections. Consequently the results of this paper's analyses are convincing evidence of the relevance of political alignment in the allocation of the COVID-19 recovery funds in Poland.

Discrepancies between municipalities ruled by the Coalition mayors and those governed by the Unaligned and Opposition mayors were relatively small-





**Figure 3. Probability of receiving GFLI2 and GFLI3 funds and shares of votes of a Coalition candidate**

Note: A global quadratic polynomial fit is represented by a solid line and local sample means by dots. Bins are equal-sized.

Source: Own elaboration with *binscatter* in Stata.

er—though still significant—in the third round of the GFLI (Tables 3 and 4, Figure 4). This might suggest that a broad public discussion on the importance of political alignment in the second round could lead to the limitation of this factor in the allocations during this round. In turn this emphasizes the role of public monitoring as a factor limiting bias due to political alignment.

## Conclusions

This study analysed the allocation of the Governmental Fund for Local Investments to Polish municipalities. Such an analysis is particularly noteworthy in the context of the political alignment hypothesis due to heterogeneous political affiliation of mayors in Poland, the relevance of the GFLI funds for municipal budgets and, most importantly, the discretionary nature of the second and third round of the allocation of funds. This study contributes to the literature on the political economy of intergovernmental transfers by analysing the allocation of the COVID-19 response funds.

The results of the analysis with the logit and OLS models showed that municipalities in which a mayor was aligned with the ruling coalition were significantly more likely to receive the second- and third-round GFLI funds than municipalities in which the mayor was either aligned with the opposition or unaligned with any party in the parliament. What is more, even when the set of analysed municipalities were limited to only those receiving funds, the Coalition municipalities were receiving higher per capita funds than the Opposition and Unaligned municipalities in round 2. To rule out the possibility that these results are driven by some systematic differences between the analysed groups of municipalities which were not controlled for in the logit and OLS models, the regression discontinuity design was employed. The results of the RD analysis showed that there were substantial discontinuities in terms of the probability of receiving the second and third rounds funds at the 50% votes threshold from the latest elections with larger estimated probabilities for the Coalition municipalities. There was also a significant discontinuity in the per capita value of the second round funds.

The results in this study unambiguously support the political alignment hypothesis. Given the large recovery packages in the post-pandemic era and the potential inefficiencies caused by biased resource allocation much public focus and attention should be given as to how resources are distributed to counteract the pandemic. The formula-based method of fund allocation which takes into account the social and economic impact of the COVID-19 pandemic for municipalities would be preferable. This indication seems to be valid not only in the context of the current pandemic but also in economic crises in general.

Further research is needed to assess whether the funds allocated through GFLI are substitutes or complements to the funds allocated by the European Union through the REACT-EU package (Recovery Assistance for Cohesion and the Territories of Europe). This recovery plan was launched by the European Commission following the coronavirus pandemic. The allocation methodology for this funding is formula-based and takes full account of the economic and social impact of the crisis on the EU countries reflecting the GDP drop and rise of unemployment including amongst young people as well as the relative wealth of the countries.

## Appendix

**Table A1. List of variables**

Variable	Description	Data source	Unit	Number of obs.	Mean
GFLI granted	Indicates whether a municipality received funds from the second/ third round of the Governmental Fund for Local Investments (Rządowy Fundusz Inwestycji Lokalnych)	Voivodeship offices, collected from PAP (2021)	0/1	2477	0.480, 0.346
GFLI per capita	The first/second/third round funds per capita (in logs); calculated only for those municipalities that received funds in a given round	Voivodeship offices, collected from PAP (2021), GUS (2021)	PLN	2477, 1189, 856	4.84, 5.35, 4.80
Coalition, Opposition, Unaligned	Municipality mayors' alignment: <i>Coalition</i> indicates a mayor who was proposed/ supported in the elections by the national committee and/or was a member of a party of the coalition ruling in parliament (that is, Law and Justice [Prawo i Sprawiedliwość], United Poland [Solidarna Polska], Agreement [Porozumienie]); <i>Opposition</i> indicates a mayor who was proposed/supported in the elections by the national committee and/or was a member of a party of the opposition in parliament (that is, Civic Coalition [Koalicja Obywatelska], The Left [Lewica], Polish People's Party [Polskie Stronnictwo Ludowe], Kukiz'15); <i>Unaligned</i> indicates a mayor who was classified neither as <i>Coalition</i> nor <i>Opposition</i>	National Electoral Commission (PKW, 2018); Internet sources for early mayoral elections in the period November 2018—December 2020 (18 cases)	0/1	2477	0.134, 0.202, 0.663

Variable	Description	Data source	Unit	Number of obs.	Mean
% share of Coalition candidate	The vote share of the Coalition candidate with the highest number of votes in the final round of the elections (that is, from the second round of the elections, unless a candidate received more than 50% in the first round). When two candidates with the highest vote shares were aligned with the Coalition, a municipality was excluded	National Electoral Commission (PKW, 2018); Internet sources for early mayoral elections in the period November 2018—December 2020 (18 cases)	%	931	32.73
Municipalities revenue from personal income tax	Municipalities revenue from personal income tax per capita in 2019 (in logs)	Statistics Poland (GUS, 2021)	PLN	2477	6.55
Excess mortality in 2020	Excess mortality calculated as the difference between the number of deaths in 2020 to the 2015-2019 mean, per 100,000 people	Own elaboration based on Statistics Poland (GUS, 2021)		2477	193.96
Luminosity	Average luminosity of a municipality	Own calculation in QGIS based on data from NOAA <sup>13</sup>	Digital number [0;63]	2477	13.72

Source: Own elaboration.

<sup>13</sup> <https://ngdc.noaa.gov/eog/dmsp/downloadV4composites.html>

**Table A2. Pre-existing differences and placebo treatment—RD analysis**

	RD estimate ( <i>p</i> -value)	Estimate at the cut-off	N	Bandwidth
<b>Excess mortality in 2020</b>				
Coalition	53.715 (0.168)	257.135	88	5.945
Opposition, Unaligned		203.42	232	19.678
<b>Municipalities' revenue from personal income tax (per capita, in log)</b>				
Coalition	-0.084 (0.445)	6.472	133	11.465
Opposition, Unaligned		6.556	184	15.153
<b>Luminosity</b>				
Coalition	-2.186 (0.494)	13.772	117	8.968
Opposition, Unaligned		15.958	187	15.336
<b>GFLI round 1, per capita funds (in log)</b>				
Coalition	-0.09 (0.506)	4.694	113	8.307
Opposition, Unaligned		4.784	224	18.705

Note: *RD estimate* is bias-corrected local-polynomial RD estimate. *Estimate at the cut-off* is a bias-corrected (linear) local-polynomial estimate to the right (for *Coalition*) and left (for *Opposition* and *Unaligned*) of the cutoff. *Bandwidth* are data-driven, asymmetric MSE-optimal bandwidths. *p-value* is based on heteroskedasticity-robust standard errors. Calculations conducted with *rdrubust* R-package by Calonico and others (2015).

Source: Own elaboration.

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