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# **WHO GETS PUBLIC FUNDING AND WHY? THE POLITICAL ALIGNMENT EFFECT ON FUNDING ALLOCATION TO LITHUANIAN MUNICIPALITIES**

Authors: Karolis Liaudinskas  
Jonas Masaitis

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**WHO GETS PUBLIC FUNDING AND WHY?  
THE POLITICAL ALIGNMENT EFFECT ON FUNDING  
ALLOCATION TO LITHUANIAN MUNICIPALITIES**

Karolis Liaudinskas

and

Jonas Masaitis

Supervisor: Linda Austere

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## **Abstract**

This paper is, to our knowledge, the first attempt in the Baltic countries to investigate the influence of political factors on the size of a municipal budget. Consistently with M. Migueis (2009), we employ the regression discontinuity design, which enables us to distinguish between the ‘partisan supporter’ and ‘political alignment’ theories heavily discussed in the literature on distributive politics and test them empirically using data from Lithuania. Additionally, we perform a case study of four Lithuanian municipalities by analyzing historical data regarding budget size and election results as well as conducting interviews with relevant specialists. We find evidence of a political alignment effect as aligned municipalities are found to receive almost 12% larger discretionary transfers. Case study results from three municipalities also confirm the presence of the effect.

**Keywords:** Funding allocation, political alignment, partisan supporter, municipalities, political economy, regression discontinuity

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## **1 Introduction**

At a time of global economic unrest efficiency has become especially important. For the government of Lithuania, which is often named one of the worst hit countries, efficiency is becoming a headache. The struggle to sustain the budget deficit is proving to be exhausting, the unemployment in the country is expected to increase to 17.7 percent in 2010 (Bank of Lithuania, 2009), and the adoption of the Euro seems to be as distant as ever. Furthermore, Transparency International has recently published its annual Corruption Perceptions Index study, in which Lithuania is ranked 52<sup>nd</sup> according to the Corruption Perception Index (CPI). Although the CPI score of 4.9 is an improvement from last year's score of 4.6, it still indicates that corruption is a generally accepted and common phenomenon in the country (Transparency International, 2009). Having in mind the economic condition that Lithuania is currently in, corruption is especially undesirable, since it impairs the country's recovery even more.

The paper builds on previous research and investigates a possible area for corruption and sub-optimal behavior by public officials – the distribution of government grants to municipalities. It has been proved in previous research, that because of a lack of correlation between the political incentives of those having power in the parliament and the economic needs and capabilities of the districts that are supported by members of the parliament, public funds are often allocated in a sub-optimal way (Bowen et al., 2006). Funds have been found to be distributed in a way that increases the possibility for members of parliament to be reelected (see, for example Cox and McCubbins (1986) or Cadot et al. (2006)). Other researchers (Migueis, 2009) have found the political control of a municipality to be a determinant of public budget allocations. In our research we will therefore analyze whether municipal budget funding in Lithuania is affected by politicians in the central government rewarding politically aligned municipalities, or by political incentives to favor any groups of voters, which might help the authorities to win future elections. To be more specific, we will test the “alignment” (more funding is allocated to municipalities controlled by the ruling central government party) and the “partisan supporter” theories (directing disproportionately more money to the regions which support current authorities most).

Our research question consists of two parts and is formulated as follows: **(1) “What are the key determinants of public budget allocation for districts and municipalities in Lithuania, and (2) is the public budget allocation pattern affected by political incentives**

**to distribute more money to particular municipalities in Lithuania?”** Normally one would expect the return on investment and the equalization of welfare to be the most important factors for the allocation of public funds to municipalities. However studies suggest that this is often not the case. Nonetheless, our null hypothesis is that the Lithuanian budget allocation scheme is based on economic and socio-economic rationale rather than political preferences or incentives. The Lithuanian budgetary statutes and legislations seem to be in favour of such a null hypothesis.

The research design we have chosen in order to answer our research question and test our hypothesis comprises of both a quantitative and a qualitative approach, namely descriptive econometrical analysis and a case study. The central part of the research is the econometric analysis which will draw from the recent work of Marco Migueis – “Distributive Politics – The Case of Portuguese Municipalities” (2009). The case study will serve as a representation of the econometric results in practice and thus should provide a firmer ground for developing conclusions. Using multiple methods is common and necessary when researching into a topic as sensitive as corruption, and is a commonly accepted way to endorse the accuracy of the findings (Hubberts, Lasthuizen & Peeters, 2005).

For carrying out the econometric analysis we will primarily use the official information provided by the National Department of Statistics and the Lithuanian Ministry of Finance on their websites. The authorities provide detailed data of the municipal budget on a yearly basis. Other necessary data can be obtained from the National Department of Statistics, the elections commission, or directly from district and municipal governments. All relevant data concerning taxes and budgeting is publicly available.

In order to carry out the case study we will use deductive analysis of official information, such as Lithuanian statutes and legislations, as well as primary data collected through qualitative interviews. The cases for analysis will be selected according to two criteria: (1) data on the variability of the size and structure of the municipal budget as well as (2) on the election results of the past four elections (two parliamentary and two municipal elections). A combination of the two criteria increases the possibility of the selected municipalities providing an illustrative relation between public financing and election results. Expert opinions will also be drawn upon in order to make the case selection procedure more reliable. Semi-structured interviews with experts (e.g. political scientists) will be held to attain a more detailed insight into the specifics of the two cases.

This paper is the first attempt to conduct research on distributive politics in Lithuania and, through the application of the dual methodology, adds to existing literature by providing a better understanding of political economy principles in a small country with a mixed electoral system. An innovative econometric methodology is applied for the analysis, thus adding to the understanding of its applicability. Furthermore, the research adds to the still developing literature of political economy issues in European countries, especially small transition economies in Eastern Europe. The dual methodology allows us to test our hypotheses in a more illustrative manner, and provides a broader understanding of the political economy situation in Lithuania. The findings of the research might be used to improve the existing distribution policy in Lithuania by identifying the areas where new and more effective controls are needed in order to ensure a fair and welfare-optimizing distribution of public funds.

The paper is organized as follows: section (2) introduces the necessary background of our research; section (3) discusses the findings of relevant research in political economy; section (4) develops the methodology; section (5) provides the results of the econometric and case study analyses; section (6) discusses the implications of the results, section (7) gives the limitations of the study, and section (8) concludes the findings of the paper.

## **2 Research Background**

In order for the reader to be able to grasp the research presented in this paper to its full extent, an introduction of some background information is necessary. Lithuania is divided into 10 large administrative districts, which consist of a total of 60 municipalities. The municipalities vary to a large extent with respect to both area and population, the most populated municipality being the Vilnius city municipality with over 550 thousand people, and the smallest being the Neringa municipality with just over 3.5 thousand inhabitants (Statistikos departamentas, 2009).

Lithuania has adopted an electoral system which is a mix of the plurality voting system and proportional representation. The country is divided into 71 plurality voting electoral districts with a similar number of voters, and in each district the candidate with the most votes is elected to the parliament. Another 70 chairs in the parliament are distributed through a proportional voting system, where all parties that pass a certain threshold are appointed mandates in proportion to the number of votes they received. Essentially a voter on Election Day receives two ballots: one to select a preferred candidate from a given list, and

another to select a preferred party. The advantage of such a mixture of the two systems is that it provides citizens with a wider range of choices, as it is possible to vote for a person belonging to one party in the plurality voting and for a different political party in the proportional voting. The disadvantage, however, is that because of the mixed system it is more difficult for a single party to attain majority in the parliament, while having only plurality voting would promote two-party systems (Duverger, 1972). In total, 16 political parties participated in the elections to parliament in 2008, ten of which received at least one chair in the parliament. Because in recent years none of the parties managed to gain own majority, Lithuania has experienced a number of coalition and minority governments.

The municipal governments in Lithuania are elected through a solely proportional electoral system – there is no possibility for a person not belonging to a political party to be elected into a municipal government. Because of this, most municipalities do not have a single party with a majority of votes and coalition governments need to be formed as well. The previous municipal elections saw a total of 24 different political parties, although some of these were only competing in several districts.

The constitutional objective of municipal governments is to ensure and provide different public services to citizens. They are allowed to have independent budgets and organize the collection of additional fees within boundaries determined by law. The major part of all municipal budgets is collected as a proportion of the personal income tax (PIT) paid by the residents of that municipality. This proportion is given by the national parliament every year: in recent years most small municipalities were allowed to keep the entire PIT collected while larger and richer municipalities were appointed lower proportions. Other taxes that are transferred to municipal budgets are the land tax, property tax and pollution tax, but the proportion of these funds in the overall budget is much smaller than the proportion of PIT income.

Municipalities in Lithuania are also responsible for performing a number of governmental functions, such as providing social support for students and the elderly, ensuring civic safety, etc. To help finance these activities municipalities receive grants from the national government. Intergovernmental grants are also provided for municipalities with smaller than average tax income, in order to somewhat equalize the different municipal budgets. The distribution of these intergovernmental grants is largely formula-based (formulaic transfers), which does not allow members of parliament to have substantial direct influence on the distribution of national government grants to municipalities. The third types of grants are meant to finance national investment projects that are carried out in cooperation

with municipal governments, and could be referred to as discretionary transfers. The intergovernmental grants account for 25 to 50 percent of the total municipal budget (Finansu Ministerija, 2009) of any municipality.

Although the fiscal distribution procedures are seemingly independent of political factors, this might not necessarily be true. As already stated above, the distribution of a major part of intergovernmental grants is formula-based and centralized. However, it is still possible for members of the parliament to influence the formulas themselves – laws that determine the distribution formulas and criteria are reviewed quite often by the parliament and are subject to change. It can be argued that by rearranging some of the formulas it is possible to make certain municipalities net winners of intergovernmental funding. There are also some grants that are distributed completely arbitrarily, such as funding for government-financed projects. Thus, even with the explicit formulas determining the distribution of most grants between municipalities, variables other than those in the formulas might explain the final distribution of public funds.

### **3 Review of Literature**

At the second half of the 20<sup>th</sup> century decentralization has become one of the most discussed topics in the literature on countries' policies. One factor that provoked this discussion was a wave of decentralizing policies employed in many countries around the world in 1980s and 1990s (Freire & Stren, 2001). According to the research made in 1994, 65 out of 75 developing and transition economies with population of at least 5 million people had implemented policies of transferring power from central governments to municipalities or other types of local authorities. In order to do so countries with different political systems made changes in protocols or even amendments in constitutions (Dillinger, 1994).

Literature on decentralization has been mostly in favour of this process and focused on benefits that decentralization can bring to a country, including better use of local information, better government accountability and lower leakage from social programs (McLure, 1995). However, these advantages are believed to be partly offset by political incentives to favour supporters of a current government and, therefore, to distribute national budget to local authorities in a biased way (Litvack et al. 1998). In order to investigate this theory and to identify the economic and political determinants of the distribution of national budgets within countries, a vast amount of literature has been developed.

*Economic determinants*

M.W. Bowen, M.E. Haynes and M.S. Rosentraub (2006) in their work “Cities, Tax Revenues, and a State’s Fiscal Future: The Value of Major Urban Centers” attempted to find an economic rationale why some particular municipalities received more investment from central governments than others. They chose Ohio State as a case study to investigate the main determinants of the amount of tax revenues collected by area and found that urban areas provided higher returns from public investment than suburban and rural areas. As a result they implied that underinvestment in urban areas harms overall state revenues and that is the reason why municipalities of urban areas should normally receive relatively more investment. However, they found that this was not the case in Ohio – funds were being allocated in a suboptimal way because of an entrenchment of political power by rural area representatives. (Bowen et al. 2006)

The political economy approach, which is of the main interest of our thesis, emphasizes political decisions and attempts to find political variables which could explain why some local authorities receive more grants than others. The literature on distributive politics identifies quite a few theories which try to contribute to a broader understanding how politicians can impact the direction of disproportional distribution of national funds (Bercoff, & Meloni, 2008). The most comprehensive and researched theories of distributive politics are described below.

#### *Pork-barrel*

The supporters of the “pork-barrel” theory state that the distribution of national budget depends on strong individuals, who hold influential positions in the parliament or government, and can persuade other members of parliament to vote for decisions that favour them. In this way municipalities that have representatives holding the most important positions in the federal authority can expect to receive more money than others. (Bercoff & Meloni, 2008)

The work “Congressional committees and the political economy of federal outlays” (1995) by Michael Alvares and Jason L. Saving is a very significant contribution to the “pork-barrel” theory. The authors developed the theory by suggesting methods how to measure “pork-barrel” and providing theoretical grounds for motivation of the representatives to direct money to their districts. Furthermore, they found strong empirical evidence in the USA that members of particular congressional committees could influence the distribution of the national budget and direct more money to the districts which they represented. The authors employed econometric methods and investigated the data from the period of 1989 to 1990. This small period was chosen in order to have only one election cycle, which prevented

from having reciprocal effect between some of their political variables and the dependent variable – outlays to districts. (Alvares & Saving, 1995)

*“Swing voter” and “partisan supporter”*

A different view suggests that the main determinants of distributive politics are the policies of political parties. Elected politicians should be concerned about future elections and, therefore, try to direct federal money to the districts that either support their party, or are politically indifferent, or support the opposing party (Cox & McCubbins, 1986). Cox and McCubbins (1986) stated that risk-averse political parties should concentrate on their loyal supporters in order to maintain the electors for the next elections. This conclusion, which in literature is also called “partisan supporter” hypothesis, contradicts with the view of Dixit and Londregan (1996) who supported the “swing voter” hypothesis. It states that politicians should direct the federal funds disproportionately to the regions where people do not have a strong opinion about which party to support, since they are the most likely to respond to favourable distributive politics (Larcineze et al. 2008). While voters with a clear political ideology will not shift easily from one party to another, it might be relatively easy to attract indifferent voters by showing superior benevolence to them.

A recent work “Testing models of distributive politics using exit polls to measure voter preferences and partisanship” by V. Larcineze, M. Snyder and C. Testa (2008) attempted to test both “swing voter” and “partisan supporter” hypotheses to provide empirical evidence in the USA which could support them. In their study, the authors addressed a reverse causality problem, which had been present in most of the previous works, and which derives from inappropriate choice of independent variables in econometric models. Most studies had used election results as a proxy for a district’s support of a party; however, these results might have been influenced by previous distribution of federal money, which is usually a source for a dependent variable. To have an unbiased view of which states and to which extent actually support which political parties the authors employed survey data, and in this way contributed to previous works. Eventually, the authors found no empirical evidence for the “swing voter” hypothesis and they found some evidence for the “partisan supporter” hypothesis, imposing that political parties actually attempt to favour their core supporters (Larcineze et al. 2008).

*Seniority*

A. Wu (2007) contributed to the existing literature by approaching the issue from a different angle and focusing on less traditional factors influencing distributive spending patterns. Particularly he investigated the impact of seniority and political closeness to others

in power. The author predicted that politicians who were more experienced and had more support from others in power were better able to direct federal money to their preferred regions. Empirical findings imply that these variables actually have influence on distributive spending patterns.

#### *The impact of the President*

V. Larcinese, L. Rizzo and C. Testa (2005) instead of investigating the impact of Congress, which has been heavily discussed in the literature, focused on the impact of the president. Previous studies that focused on the New Deal program found some empirical evidence about president's influence on distributional spending of federal funds in 1940s (Wright, 1974), (Wallis, 1987), (Anderson, & Tollinson, 1991). However the authors attempted to examine whether similar patterns could be found today. Larcinese et al. (2005) explained that the president could exercise his power and influence budget distribution decisions mainly through his veto power. Actually, a threat of the veto power is normally enough to make Congress accept decisions favourable to the president. Eventually, the authors found evidence that states, which had supported the president during elections, received disproportionately more federal money. Furthermore, evidence showed that states which were ruled by governors belonging to the same party as the president also tended to receive more money. Both of these conclusions give support to the "partisan voter" hypothesis (the president tries to direct more money to his core supporters) and "pork-barrel" theory (the president uses his power to direct more money to the states which are ruled by his party). (Larcinese et al. 2005)

A more recent study of the president's influence on the distribution of the national budget is done by C.R. Berry, B.C. Burden and W.G. Howell (2009) in the paper "The President and the Distribution of Federal Spending". As a basis for their analysis they used a widely accepted theoretical model of Baron and Ferejohn (1989), which deals with distribution of funds. The model is presented like a game between all the elected legislators who try to extract as much money to their constituencies as possible by bargaining and voting, and the most power belongs to those who can propose the legislation. The authors provided empirical evidence which coincided with previous works about president's influence, and stated that the president has a considerable impact on the distributive politics and directed more federal money to the states ruled by his constituencies. Moreover, they partly opposed the "pork-barrel" theory, by finding no strong evidence that majority party members, committee chairs and other influential legislators have power to extract more federal outlays to their jurisdictions. (Berry et al. 2009)

*Democratic system rules*

Finally, literature on distributive politics recognizes a theory that the source of disproportional shares of national budget among states in the USA is concealed in democratic system rules, or more specifically, overrepresentation of small states in the parliament (Bercoff, & Meloni, 2008). According to the Constitution of the USA, all states must have equal number of representatives in Congress regardless of population. This makes small states overrepresented, and large states underrepresented, and as a result, disproportionately more federal outlays are directed to smaller states (Lee, 1998). However, V. Larcinese, L. Rizzo and C. Testa (2007) in their work “Do Small States Get More Federal Money? Myth and Reality About the US Senate Malapportionment” resolved to reject the hypothesis about representation of small states, and found no evidence that could support this theory. Furthermore, they demonstrated that the results of previous studies on the representation hypothesis could not be trusted due to problems with econometrics. (Larcinese et al. 2007)

*Political patronage*

In political science the concept of political patronage can be broadly defined as “the allocation of discretionary favours in exchange for political support” (Hasen, 1993). Although describing essentially the same phenomenon as the theories described above, political patronage takes on a slightly different perspective. Patronage clients offer their political (and sometimes monetary) support in exchange for certain government benefits, such as public funding, contracts for public projects, employment in public service, etc. (Hasen, 1993). Although political patronage is considered to be a strong form of corruption, the subject falls out of the scope of this research and is not investigated in this paper.

*Other countries*

A major part of the current literature on distributive politics is biased towards the USA as a case study, since the structure of the political system there is very convenient and relevant to study. However there are examples of how scholars successfully applied models developed in USA to investigate the political determinants of national budget allocation in other countries.

Eva Johansson (2003) in her paper “Intergovernmental Grants as a Tactical Instrument: Empirical Evidence from Swedish Municipalities” applied the theoretical model of Lindbeck & Weibull (1993) and Dixit & Londregan (1996) to analyze a huge set of data and to test whether Swedish central authorities targeted some groups of voters and distributed grants to municipalities in a biased way. The author pointed out a problem of the lack of

concrete theoretical models in many previous studies on distributional policies. She referred to the theoretical model of Lindbeck & Weibull (1993) and Dixit & Londregan (1996), which states that members of authority should use promises in order to be re-elected and, therefore, target “swing voters”. In the author’s opinion, this model is the most stringent and has the clearest empirical implications. Also, her paper tackled the problem of reverse causality deriving from inappropriate independent variables in use (those representing election results), which was later described by Larcinese et al. (2007). In order to have a proper proxy for voters’ political ideology she used survey results instead of taking results of recent elections. Finally, the author found evidence that Swedish authorities were involved in pork-barrel politics and directed more money to the regions with more “swing voters”. (Johansson, 2003)

Marco Migueis (2009) used a different approach to avoid the reverse causality problem – he used Portuguese data to find out if more spending is allocated to municipalities controlled by the party that has majority in the central government. In his analysis he applied a regression discontinuity design, which allowed eliminating the problem in previous research raised by Larcinese et al. (2007). The author finds that local governments that are controlled by the same party as the central government received 19% more arbitrarily distributed public grants than those controlled by other parties. This can be explained in two ways: central government politicians might be supporting their colleagues in local governments in order to make them happier and better off; or they might just see it beneficial to win local elections in order to gain momentum and increase the chance of winning in the following elections to the central government. (Migueis, 2009)

In a recent study Bodenstein and Kemmerling (2008) investigated the distribution patterns of European Union Structural Funds and found that the selection of regions that receive Structural Funds and the amount of support appointed to these regions cannot be fully explained by official criteria. Some regions with high GDP per capita and relatively low unemployment receive more Structural Fund spending than regions which are more eligible to receive the spending. Instead, the authors find evidence of pork-barrel in the distribution of Structural Fund spending between sub-national regions, as regions that had more “swing voters” in national parliament elections receive significantly higher contributions. (Bodenstein & Kemmerling, 2008)

A study on the determinants of the distribution of transport infrastructure investments in France, conducted by Cadot et al. (2006) combined the arguments for efficiency and politics. The authors developed a model to investigate whether infrastructure investments were aimed at the regions that would benefit from additional infrastructure the most, or were

other factors also important. Cadot et al. failed to find evidence that politicians seek to maximize benefit from the investment, but confirmed their hypothesis that regions with “swing voters” receive higher infrastructure investments. Also, they tested whether regions that are governed by members of parties in the ruling coalition in parliament receive superior treatment, but the OLS coefficients showed no significance. (Cadot et al., 2006)

Anne Case (2001) tested what political factors influenced the direction of block grants to families in Albania. Parliament in this country is elected from small geographic regions – communes, which can stimulate the pork-barrel politics. Since during the study period there were only two competing parties, A. Case applied the Snyder (1989) and Dixit & Londregan (1996) frameworks to test her hypotheses. Eventually A. Case provided evidence that politics mattered in terms of budget allocation in Albania as much as in the USA. (Case, 2001)

Other works investigating political impact outside the USA include J.J. Bercoff and O. Meloni (2008) paper “Federal Budget Allocation in an Emergent Democracy: Evidence from Argentina”, and A. Porto and P. Sanguinetti (2001) study “Political Determinants of Intergovernmental Grants: Evidence from Argentina”. These works, as well as all other papers discussed above, tested their hypotheses using an econometric analysis; however both of them got opposing results. A. Porto and P. Sanguinetti (2001), consistently with some studies made in the USA (e.g. Lee, 1998), found that in Argentina overrepresentation of small provinces in the parliament lead to disproportional allocation of national funds. Meanwhile, J.J. Bercoff and O. Meloni (2008) found no evidence in Argentina concerning either overrepresentation or congressional theories.

To our knowledge, none of the descriptive economic theories described above have ever been researched in Lithuania or any other Baltic state. This is most probably due to a rather short history of municipal budgets, which subsequently restricts sample size. Only recently has enough data become available to allow for reliable tests and robust conclusions. Despite the lack of empirical data, a Global Integrity Dialogue event in Riga recently identified the problem of political party patronage as one of the key sources of corruption in Latvia (Heller, 2008). This again shows the need for research in the field of distributive politics in the Baltics.

Out of the many different theories concerning distributive politics we have selected to test two on the case of Lithuanian: the “Political Alignment” and the “Partisan Supporter” theories. Both of these theories have been researched previously in countries similar to Lithuania both demographically and politically. Comprehensive models that account for possible reverse causality have recently been developed to test the theories. Furthermore,

other theories were either inapplicable to the case of Lithuania (the President's influence on budget allocations to municipalities is negligible), or the data collection was beyond the scope of the Bachelor Thesis (testing the pork-barrel theory requires a proxy for an individual's persuasiveness and influence). For all of these reasons the following paper focuses solely on the Political Alignment and Partisan Supporter theories. The two theories are quite closely related and can be tested using a single methodology (Migueis, 2009).

#### **4 Research Design Description**

Political economy is an interesting and sensitive field, topics of which can be discussed and interpreted in different ways. For that reason we chose not to rely only on econometric analysis as most previous studies did but also to include a discussion of a case study in Lithuania. Moreover, our research question requires investigating two different issues, namely what the official determinants of the distribution of the national budget among Lithuanian municipalities are, and if there is a pattern of distributive politics in Lithuania which could affect the amount of money municipalities receive. As a result, our research design can be divided into two parts, which are econometric analysis and a case study.

##### ***The Determinants of the Size of a Municipal Budget***

In order to have a better understanding of the economic, social and demographic factors that might have influence on the size of a municipal budget, and in order to build a firmer ground for testing these factors in the regression analysis, we made a research of Lithuanian statutes and laws describing the formation of municipal budgets. Additionally, we conducted interviews with a number of politicians and other relevant specialists to gain additional accuracy of the information retrieved from statutes, and presumably to identify political factors that could impact municipal budgets.

The statute, where we found the economic, social and demographic determinants of the size of a municipal budget explicitly stated, is called The Law of the Republic of Lithuania Regarding the Methods Used to Determine the Revenue of Municipal Budget, 1997 July 2, No. VIII-385. The ninth article of this law gives a list of the factors and their relative impact on the size of formulaic transfers directed to a municipality. Apparently, the most influential factors are (1) the number of children aged from 0 to 6; (2) the number of pensioners; (3) the number of children aged from 7 to 17; (4) the total length of roads and streets in the municipality and (5) the area of the municipality. Factors that have less impact include (6) the total area of educational institutions in the municipality; (7) the total area of land covered with buildings and (8) the area of land which has a resort status. All of these

determinants are variables in a formula, which gives the size of formulaic transfers to be assigned to municipalities. The interviewees confirmed that these features of municipalities are the most influential when determining the size of a municipal budget and, additionally, identified the total population of a municipality as one of the possible determinants (Interview A, January 18, 2010; Interview F, March 10, 2010).

Besides formulaic transfers, a municipal budget consists of discretionary transfers, which are distributed arbitrarily by the government. No statutes state explicit rules how these transfers should be distributed across the country. Since there are no official economic, demographic or social criteria, the differences in discretionary transfers among Lithuanian municipalities might be driven by political variables. The interview with an employee working in the budget department in the administration of one particular municipality revealed that during the years from 2003 to 2007 the municipality received exceptionally large financial support from the government in the form of discretionary transfers. She attributed this phenomenon to the fact that during the mentioned period a large number of politicians, who previously worked in the same municipality, were elected to the national parliament and held strategically important positions in the government (Interview D, March 17, 2010). This behaviour could have been an example of both the ‘alignment effect’ (since during the period the municipality and the country were ruled by the same leading party) and the ‘partisan supporter effect’ (since the government leaders might have rewarded their voters for a high percentage of votes in the municipal elections in December, 2002).

According to the interviews with politicians, the government is supposed to distribute larger formulaic and discretionary transfers to municipalities that are in more severe need which can be measured by the 8 factors mentioned above (Interview F, March 10, 2010; Interview G, March 10, 2010). Therefore we hypothesise that discretionary transfers are distributed primarily according to the relative need of money (i.e. demographic and other criteria established in law). Nevertheless, interview results give reason to believe that the distribution of discretionary transfers among Lithuanian municipalities is also affected by political determinants, which is tested in this study (Interview B, January 20, 2010; Interview D, March 17, 2010).

### ***Econometric analysis***

The most important part of our study is the econometric analysis, which we use in order to discover variation of the amount of money distributed to municipalities that cannot be explained by economic variables but can be explained by political ones. The independent

variables for this part of analysis are chosen according to the results of our research of Lithuanian statutes and insights from interviews, as well as motivation provided by previous studies.

In particular, we use the methodology which was developed by Marco Migueis in his paper “Distributive Politics – The Case of Portuguese Municipalities” (2009). M. Migueis applied his empirical strategy to investigate whether the alignment between local and central governments in Portugal brings disproportionately more financial benefits to the local government. We chose this paper as a basis of our methodology due to the following reasons.

First of all, the country of interest in the Migueis research was Portugal, which is a very similar country to Lithuania in many aspects, including demographics, politics and economics. For example, both countries are members of the European Union, they are parliamentary republics divided into districts and municipalities, in both countries there is a multi-party system, they have similar election procedures (e.g. the elections of governments of municipalities are held every four years in a party-lists proportional representation system, with direct and secret voting), and the population of both countries does not exceed 11 million. Even standards of living in terms of GDP per capita are similar (18,977 int. \$ for Lithuania and 22,232 int. \$ for Portugal in 2008, according to IMF).

Secondly, M. Migueis’s work is up to date as it was published in September 30, 2009. He developed a unique, modern, and at the same time comprehensive econometric approach to test his hypothesis, and in this way contributed to the existing literature on distributive politics. This new approach allows the author to account for the previous critics on similar studies (e.g. Larcinese’s et al. (2008) critic that using election results in regressions leads to reverse causality problems in the majority of previous research). Therefore, we believe that testing this new empirical strategy on the case of Lithuania is a further contribution to the existing literature.

Thirdly, the interviews with politicians and other relevant specialists revealed that the distribution of discretionary transfers among Lithuanian municipalities might be influenced by political incentives. The interviewees mentioned particular cases of variations of discretionary transfers in municipalities throughout the history of Lithuania, which could theoretically be explained by both ‘alignment effect’ and ‘partisan supporter effect’ (Interview B, January 20, 2010; Interview C, March 9, 2010; Interview D, March 17, 2010). As the Migueis’ (2009) model is capable of testing both of these theories, it is highly applicable and useful in our case. So far, no criticism on the Migueis work has been made by

peer scholars because the work is still very recent, however some possible drawbacks of the methodological framework applied are discussed in section (7) of this paper.

### *Regression specification*

In order to test whether there is a pattern of central budget allocation across the municipalities in Lithuania depending on political incentives to distribute more money to particular municipalities we employ a regression discontinuity design, which was suggested by M. Migueis (2009). The regression specification and variables are described below:

$$Transfers_{i,t} = \beta Align_{i,t} + F(Margin_{i,t}) + \Omega Pop_{i,t} + \lambda FormTrans_{i,t} + M_i + Y_t + \varepsilon_{i,t}$$

$$\text{where } F(Margin_{i,t}) = \begin{cases} \delta_1 Margin_{i,t} + \delta_2 Margin_{i,t}^2 + \delta_3 Margin_{i,t}^3, \\ \text{in case a municipality is politically aligned} \\ \delta_4 Margin_{i,t} + \delta_5 Margin_{i,t}^2 + \delta_6 Margin_{i,t}^3, \text{ otherwise} \end{cases}$$

$Transfers_{i,t}$  = The logarithm of discretionary transfers per capita to a municipality  $i$  in year  $t$

$Align_{i,t}$  = A dummy variable, which is equal to 1 in case the municipality is politically aligned with the party which is governing the country, and 0 otherwise

$Margin_{i,t}$  = The margin of victory or loss of the leading party in the central government during the municipal election. (This variable is constant for periods of 3, 4 or 5 years in between elections, depending on the year, since the length of the term of office has been changing throughout the study period)

$Pop_{i,t}$  = Logarithm of population of a municipality

$FormTrans_{i,t}$  = Logarithm of per capita formulaic transfers received by a municipality

$Y_t$  = Year fixed effects

$M_i$  = Municipality fixed effects

$\varepsilon_{i,t}$  = Random error term

In the regressions we use heteroskedasticity robust standard errors and also allow for the possible clustering of standard errors at the municipality level. By doing so, we account for the possible correlation of some of the variables in municipalities over time. Clustered standard errors at the level of municipalities are slightly larger, thus eliminating a possible estimation bias.

### *The Dependent Variable*

Since formulaic transfers are predetermined and it is difficult for politicians to influence them, while discretionary transfers depend on their decisions arbitrarily, the dependent variable in our regression is the natural logarithm of per capita discretionary transfers to a municipality  $i$  in year  $t$  ( $Transfers_{i,t}$ ). The logarithm helps to interpret the

results, since it means that if the local elections in a municipality are won by the party who is a leading party in the parliament, the estimated coefficient  $\beta$  multiplied by 100 is a percentage by which the municipality is expected to receive a larger discretionary transfer from the government, holding all other variables constant. Also, the presence of the logarithm emphasizes that the transfers in reality cannot increase infinitely regardless of what values are obtained by all other variables. (Migueis, 2009)

#### *The Variable of Interest*

Since the Migueis' (2009) model is designed to primarily test the alignment hypothesis, the variable of interest in this regression specification is the binary treatment variable, which is equal to 1 if the municipality is aligned with the party in power nationally, and 0 otherwise ( $Align_{i,t}$ ). The alignment is considered to be present when the leader of the municipality (which in Lithuanian case is the mayor) belongs to the party which is a member of the ruling coalition and participates in the formation of the council of ministers. This is justified by the fact that normally a mayor represents the party who collects the most votes in the municipality elections and has considerable influence over the municipal chamber's decisions. Under our null hypothesis we expect this variable to have no significant impact on the amount of transfers received by a municipality. (Migueis, 2009)

#### *The Forcing Variable*

It is also vital to include a variable  $Margin_{i,t}$  – margin of victory or loss, which represents the level of supporters of a party in power nationally. Excluding this variable would lead to omitted variable bias, since the party in power nationally might not only attempt to transfer more funds to a municipality due to the political alignment, but also due to a higher or lower level of support which is expressed as the percentage of votes collected during the local elections. These two variables ( $Align_{i,t}$  and  $Margin_{i,t}$ ) are obviously correlated and both of them are determinants of our dependent variable. (Migueis, 2009)

Margin of victory or loss ( $Margin_{i,t}$ ) is the forcing variable, which makes the regression obtain the discontinuity design. This variable is formed in the following way. When the leading party in the parliament wins local elections in a municipality,  $Margin_{i,t}$  obtains a value equal to the percentage vote collected by the leading party in the parliament minus the percentage vote collected by the party which finishes second in terms of most votes in the local government elections. When the leading party in the parliament does not win local elections in a municipality,  $Margin_{i,t}$  becomes the percentage vote collected by the leading party in the parliament minus the percentage vote collected by the party who wins the elections in a municipality. (Migueis, 2009) The municipal elections in Lithuania were held

in March 1997, March 2000, December 2002 and February 2007. However, since the variables regarding municipal budget size or population are calculated for a full year, the starting dates of election terms were also adjusted accordingly: Results of elections that were held in the first quarter of a year were regarded to have taken power from the beginning of that year, whereas results of elections held in the last quarter of a year are treated as coming into power from January next year. The same method was applied for national elections results when constructing the *Align* variable.

The regression discontinuity design is often used by researchers when evaluating the causal effect of a binary intervention or treatment, received only by a part of analyzed units (Imbens & Lemieux, 2007). In the case of this research, we wish to measure the causal effect of political alignment on the amount of discretionary governmental transfers received by a municipality. The forcing variable  $Margin_{i,t}$  contains a cut-off point, at which the value of the binary treatment variable  $Align_{i,t}$  changes its value from 0 to 1. A municipality becomes aligned when the party in power in the central government wins the municipal elections, so the cut-off point here is at  $Margin_{i,t} = 0\%$ . The regression discontinuity design is constructed in a way that allows controlling for and measuring the possible effect of the change in the treatment variable (e.g.  $Align_{i,t}$  in our case). This construction is achieved by including the forcing variable  $Margin_{i,t}$  as well as an interaction term of the forcing variable and the treatment variable  $Align_{i,t}$  into the regression. In such a design, an effect of the treatment variable on the outcome would mean a vertical shift of the regression line, which would be captured by the regression coefficient on  $Align_{i,t}$ . The interaction term allows for a change in the slope of the regression line beyond the cut-off point.

In our case, the reason for choosing the regression discontinuity method is its flexibility to make a distinction between the two cases: (1) when the leading party in the central government attempts to allocate more funds to municipalities where they have more supporters (no matter if a municipality is controlled by the same party or not) and (2) when the leading party in the central government wants to transfer more money to some particular municipalities since they are controlled by the same party. In the first case, discretionary transfers of money to a municipality ( $Transfers_{i,t}$ ) should incline proportionally to the increase in the percentage vote collected by the leading party in the central government during the last municipal elections in that municipality. However, we would not anticipate that the transfers should increase sharply when the leading party in the central government wins the municipal elections in a particular municipality. In the second case, we would observe a sudden increase in the discretionary transfers received by the municipality if the

leading party in the central government wins the local elections (even marginally). Furthermore, using a regression discontinuity design ensures that in our study there are no reverse causality problems, for which many previous similar studies had been criticised. If we observe a sharp increase of discretionary transfers at the cut-off point, where margin of victory or loss equals zero, it must be caused by the marginal victory. The reverse statement that at the cut-off point increased discretionary transfers cause the marginal victory cannot be true, since that marginal victory was random and could not have been forecasted. The winning party could have equally likely ended up on the other side of the cut-off point. (Migueis, 2009)

In order to control for the impact of the margin of victory or loss of the leading party in the central government on the transfers, we use a two-sided cubic function, where the margin of victory or loss is measured on the horizontal axis and discretionary transfers on the vertical axis. Such a specification is able to capture and reflect the pure impact of the margin of victory or loss on transfers more accurately, because we allow the asymmetric and very flexible relationship between transfers and the margin of victory or loss, which might appear due to the existence (or non-existence) of political alignment. Therefore, if we observe a discontinuity at the cut-off point, we will be able to interpret it as a result of political alignment but not a result of functional form misspecification. (Migueis, 2009)

#### *Other Independent Variables*

We also extend our regression specification by adding other variables which control for other characteristics of a municipality that change over time, since omission of them could cause omitted variable bias. First of all, we control for the population of a municipality ( $Pop_{i,t}$ ), since it might determine the discretionary transfers to municipalities, and be correlated with the election results. Correlation with the election results might originate from the fact that larger municipalities are likely to cause greater political competition. We believe that larger municipalities might need less discretionary transfers per capita as they are expected to be more capable of collecting enough tax revenues to cover their needs for funds. Therefore, we expect the coefficient on population to be negative and statistically significant.

Secondly, we will include the natural logarithm of formulaic transfers per capita received by a municipality ( $FormTrans_{i,t}$ ), which represent social conditions in municipalities. As already mentioned above, formulaic transfers are designed to be a function of such variables as the number of pensioners, school-age children, the length of roads and streets in the municipality, etc., which are expected to have an impact on discretionary transfers received by municipalities and to be correlated with municipal election results. E.g.

the more pensioners live in a municipality, the higher the formulaic transfers to that municipality are; however this fact also identifies that a municipality is in need of extra funds which can be provided through discretionary transfers. Thus, consistently with Migueis (2009) work, by adding this single variable we control for the most important social factors. The inclusion of this variable is not supposed to cause endogeneity problems since the rules deciding the formulaic transfers are predetermined, which means that they are neither impacted nor have any impact on other variables determining discretionary transfers. However, if discretionary government transfers to Lithuanian municipalities are distributed according to socioeconomic factors within the municipalities, we should expect the control variable of formulaic transfers to have a positive and statistically significant regression coefficient. (Migueis, 2009)

The tax income of a municipality might also be a possible source of omitted variable bias, as it might determine discretionary transfers (the more tax income is collected, the less is needed to allocate discretionarily) and be correlated with election results (the richer the municipality is, the tougher the political competition inside the municipality might be). However, the impact of wealth is partly covered by the formulaic transfers variable. As formulaic transfers per capita illustrate the amount of extra funds required by a municipality, it also simultaneously indicates the municipality's ability to collect tax income per capita. The less tax income per capita is collected, the more formulaic transfers per capita are received. As a result, the inclusion of formulaic transfers into the regression covers the impact of not only socioeconomic factors, but also the overall wealth of the municipality. Therefore we do not include tax income of municipality into our regression, as it would reflect essentially the same cause. (Migueis, 2009)

Finally, in our principle regression specification, we will include year dummies in order to avoid omitted variable bias (OVB) coming from time fixed effects – effects that are consistent over the municipalities but differ over time (Migueis, 2009). This will allow us to control for such factors as GDP growth in the country, overall increase in the discretionary transfers in the country, etc. Furthermore, in this way we account for inflation and, thus, do not need to adjust the nominal values of our collected data. We will also extend our regression by accounting for municipality fixed effects in order to illustrate how the estimates of the coefficients change when we control for effects that are constant over time but differ among municipalities. However, we will draw our conclusions from the regression specification which includes time fixed effects only. The reasoning for this is the fact that our regression contains a number of variables that do not vary over time significantly. E.g.

populations of municipalities change only marginally from year to year, while the alignment dummy and other election results are constant in a municipality for a few years in a row, depending on the frequency of elections. Therefore, municipality fixed effects would capture a large part of the impact of population and election results on discretionary transfers, and we would observe biased coefficients on  $Pop_{i,t}$ ,  $Align_{i,t}$  and  $Margin_{i,t}$ . In literature this phenomenon is called the fixed effects bias (Buddelmeyer et al., 2008). Furthermore, our research question requires not only investigating the impact of political variables on allocation of public funds but also identifying the overall key determinants of public allocation. As population reflects a municipality's size and, therefore, the intensity of political competition, it might be one of the key determinants of discretionary transfers. Due to its importance, we cannot disregard it by including municipality fixed effects. All in all, the regression specification without municipality fixed effects serves best to answer both parts of our research question.

Having considered all of the above mentioned effects, we can divide our general null hypothesis “the Lithuanian budget allocation scheme is based on economic and socio-economic rationale rather than political preferences or incentives” into four separate hypotheses. Each of the hypotheses can be statistically tested with the model described above.

Hypothesis	Variable	Expected coefficient(s)
1. Municipalities do not receive larger discretionary transfers because of being ruled by the parties in power nationally (alignment effect).	$Align_{i,t}$	Statistically insignificant
2. Municipalities do not receive relatively larger discretionary transfers because of giving relatively more support to the party in power nationally during municipal elections (partisan supporter effect).	$Margin_{i,t}^2$ $Margin_{i,t}^3$ $Margin_{i,t}$	Statistically insignificant
3. Municipalities with larger population receive smaller discretionary transfers per capita.	$Pop_{i,t}$	Negative and statistically significant
4. Municipalities that are in need of extra funds because of more severe social conditions receive larger discretionary transfers per capita.	$FormTrans_{i,t}$	Positive and statistically significant

### Case study

Political decisions can often be interpreted from various perspectives, and, as pointed out previously, variation of numbers might fail to capture some important aspects of policy and decision-making. Therefore, we also present an in-depth qualitative analysis of several

carefully selected cases that could reveal specific distribution patterns that would not be visible in the regressions.

The selection procedure of the cases was discussed in-depth with an expert of Lithuanian budgetary policy Dr. Vlada Vitunskiene – head of the Economics department in LZUU (Lithuanian University of Agriculture) and former advisor to the President of the Republic of Lithuania. She recommended analyzing the dynamics of all municipal budgets and selecting those with the largest deviations from the overall increasing trend. After conducting the analysis we have selected four Lithuanian municipalities with a significant variation of budget size and composition (especially in the years following an election) for the case study. We have closely examined available data on the different components of government grants and government-financed projects in each of the municipalities, in search of increased variation that could be associated with changes in the central or local political arena (e.g. elections).

To gain additional information on the financing history of the municipalities selected for the case study, we have conducted semi-structured interviews with two members of the respective municipal councils, two municipal administration officials, as well as two members of parliament, one of which is also a member of the parliamentary budget and finance committee. Mayors of each of the four analyzed municipalities were invited to recommend the most competent persons to conduct the interviews with, thus increasing the reliability of the interview results. Unfortunately, not all mayors were equally willing to participate in the research process. Furthermore, as most of the interviewees wished to remain anonymous in the research, no names of the interviewed politicians will be provided. The interviews are treated as a part of the case study and analyzed together with the municipality data.

The questions of the interviews were designed to provide an insight into the relationship between local authority members and members of parliament to learn whether there are signs of special attention towards municipalities governed by party colleagues. The semi-structured interview form allowed us more freedom to shift the flow of the interview in an attempt to gain further information on some topics that had fallen outside the scope of the original interview structure. A case study protocol with the interview questions for local and national authorities is provided in appendix A. Due to the large physical distances between the municipalities, most of the interviews were carried out over the telephone and only one was conducted face-to-face. However, we believe that this should not have had significant influence on the reliability of the responses of the interviewees because complete anonymity

was guaranteed. In addition, a semi-structured telephone interview with a respectable Lithuanian political scientist was carried out in order to gain a better understanding of the management and financing structure of Lithuanian political parties as well as the possible implications of our research.

Finally, the answers of the respondents and the data on municipal budget composition and variation were used to create a comprehensive and illustrative view of the determinants of public funding allocations and the importance of political incentives.

#### *Data*

The data required for both parts of the research was collected from several different public sources. Data referring to the discretionary and formulaic transfers was retrieved from the website of the National Department of Statistics, where the decomposition of budgets, consisting of tax revenue, discretionary transfers and formulaic transfers for all the 60 Lithuanian municipalities is provided for the period from 1998 to 2008. The results of municipal and national elections are provided in the website of the State Election Commission, for the period from 1992 to 2008. The results are presented as percentage of votes collected by each party in different municipalities. Also, the webpage provides a list of mayors governing the municipalities for the same period. Finally, the populations of the Lithuanian municipalities and other demographic data were retrieved from the webpage of the National Department of Statistics, where the information is given for the period from 1996 to 2009.

After collecting the necessary data, an unbalanced panel with a total of 650 municipality-year observations was constructed for the period 1998-2008. The panel was unbalanced, because five of the current 60 municipalities were only established in 2000 during an administrative restructuring procedure. Therefore, budget related data for these five municipalities does not exist for the years 1998 and 1999. A simple visual control for outliers revealed one significant outlier in all years of observation – the municipality of Neringa. This smallest municipality in Lithuania had only 3,378 registered residents in 2008 and received 9.076 thousand Litas per capita. In comparison, the second smallest municipality received 5.261 thousand Litas per capita, while the average value for 2008 for all of the 59 remaining municipalities was 2.244 thousand Litas. This can be explained by the fact that the municipality of Neringa is both a very popular resort and an extraordinary nature reserve, which attracts a plethora of local and foreign tourists. Thus, it requires extra funds for the maintenance of its representative condition. Furthermore, in the municipal election of 2002 and 2007 the “Coalition for the Future of Neringa” received the most votes and held the

mayor position. This special political party is not represented in the Seimas, which gives further grounds for excluding all 11 observations of the municipality of Neringa from further analysis. The descriptive statistics of the remaining 639 municipality-year observations is provided in Appendix B.

The descriptive statistics illustrates the decomposition of the average municipality's budget. The largest part of the average budget is collected by the municipalities themselves from the personal income tax (PIT) and other taxes paid by the residents of the municipality. Formulaic transfers, which are distributed to municipalities according to certain demographic variables by a pre-determined formula, are, on average, the second largest item a municipal budget. Discretionary transfers constitute the smallest part of the budget to municipalities, however, they are the only ones that can be directly affected by politicians without having to change the existing legislations.

The descriptive statistics table also provides information about the binary variable *Alignment*, which gets the value of one if the mayor of a municipality belongs to the party in power in the central government, and zero otherwise. During the sample period 35.6 percent of the municipalities were politically aligned with the central government. Descriptive statistics of the Margin of win/loss by the leading party in the central government (*Margin of win/loss*) indicate a volatile performance of the leading party in municipal elections. In some cases the party in power centrally would lose municipal elections by as much as 70% of the votes to another party. In other cases the party in power would win the local elections by a margin of over 60%.

For an additional source of secondary data we have studied Lithuanian statutes and legislations thoroughly to identify the criteria according to which the national budget of Lithuania is distributed (e.g. a percentage of pensioners within the municipality's population) to municipalities. The results of this desk research have been used in the case study analysis as well as the econometric analysis, particularly in the process of formation of the independent variables. Data necessary for this part of the study is publicly available and was taken from the legislative database of the Lithuanian parliament – the Seimas.

## **5 Review of Empirical Findings**

### ***Results of Econometric Analysis***

The main empirical results of our econometric study are presented in the Table 1, Appendix C. We run a set of four regressions gradually adding more variables. Column 1 shows the impact of the alignment between central and municipal governments on the per

capita discretionary transfers to a particular municipality. In all the four specifications we control for marginal victory or loss in municipal elections by a party which is the leader in the central government. By doing so, we immediately eliminate the omitted variable bias originating from the fact that not only the alignment but also relative support to the party can influence discretionary transfers. The coefficient on alignment is equal to 0.1419 and is statistically significant at a 10% confidence level, which means that if a municipality is ruled by a party, which has the most influence in the central government, the municipality can expect to receive on average 14% more discretionary transfers per capita than in the case of being ruled by any other party, holding all other factors constant. However an R-squared of only 0.070 shows weak explanatory power of the regression.

In column 3 we add two more factors that could cause omitted variable bias in the regression, namely the municipality's population and formulaic transfers per capita, since they both are likely to affect discretionary transfers and the party in charge of a municipality. The coefficient on political alignment increases to 0.1540 and becomes statistically significant at a 5% confidence level, implying that in column 1 the impact of alignment was underestimated. We find that municipalities with smaller populations tend to receive more discretionary transfers per capita as the coefficient on the natural logarithm of population equals -0.1344 and is statistically significant at 1% level. It implies that if a municipality lost 1% of its population, it can expect to receive on average 0.13% more discretionary transfers per capita, holding other factors constant. The coefficient on the logarithm of formulaic transfers per capita is equal to 0.2452 and statistically significant at a 1% level. Since formulaic transfers are determined by specific formulas that include such variables as the relative number of pensioners, number of school-age children, etc., it reflects various demographic conditions and the need of extra money in a municipality. Therefore, a change in municipality's demographic conditions that would result in formulaic transfers becoming larger by 1% is expected to lead to larger discretionary transfers by 0.24%, holding other factors constant. In column three the R-squared is equal to 0.491, which means that the variation of all the independent variables involved can explain around 49% of the variation in the dependent variable.

Column 4 presents our main and most reliable results, since besides including all the relevant independent variables we also control for time fixed effects. In this way we eliminate all possible omitted variable bias coming from factors that can determine discretionary transfers, are correlated with the municipal election results, and are changing over time but equal across municipalities at any given point in time (e.g. economic growth). As a result,

according to the adjusted R-squared this regression can explain 83% of the dependent variable's variation. Furthermore, the coefficient on alignment remains statistically significant at a 5% confidence level (p-value equals 0.044) and drops to 0.1189. This implies, that a municipality can expect to receive around 12% more discretionary transfers on average if locally they elect a party which has the most power in the parliament, holding other factors constant (see Graph 1 in Appendix D). This empirical evidence rejects our first hypothesis that in Lithuania the political alignment between local and central governments does not have any impact on discretionary transfers to a municipality.

Having a statistically significant coefficient on alignment, we can conclude that discontinuity in the cubic function of marginal victory or loss (by the leading party in the central government in municipal elections) is present and that at the point where the margin of victory or loss equals zero the curve shifts up by 11.89 percentage points (see Graph 1 in Appendix D). As a result of the regression discontinuity design we can be more confident that our results were not affected by reverse simultaneous causality problems, which many previous studies had suffered from. The statistically significant jump of the discretionary transfers must be caused by the marginal victory or loss variable becoming marginally more than 0, which means winning the municipal elections. The reverse statement that bigger discretionary transfers could cause marginal victory cannot be true, since the winning party could not have predicted winning the elections marginally and could have easily ended up on the other side of the cut-off point.

Although these additional 11.9% of discretionary transfers received by a municipality due to the alignment with central government might seem impalpable, it can become a rather significant benefit to an average municipality. In 2008 on average a Lithuanian municipality received around 5.7 million Litas in discretionary transfers. Consequently, an aligned municipality on average received 670 000 Litas more than an unaligned one. Since the minimum monthly wage in 2008 in Lithuania was 800 Litas/month, an aligned medium-sized municipality could have employed on average almost 71 additional minimum wage workers for the whole year.

As also shown in column 4, the coefficients on population and formulaic transfers remain statistically significant at a 1% level after including time-fixed effects. However the impact of population decreases slightly (the coefficient becomes equal to -0.127), while the influence of socio-demographic conditions declines more substantially (the coefficient drops to 0.1014) in comparison to column 3. Larger municipalities are found to receive fewer discretionary government transfers per capita, thereby supporting our third hypothesis. A

possible explanation for such a result is that the largest municipalities in Lithuania are also the richest – they are possibly able to collect enough tax revenue to satisfy their larger need for funds. In fact, the three largest municipalities in Lithuania are required to transfer an amount of the personal income tax revenue determined by law to the national treasury and cannot keep the entire amount. This indicates that the largest municipalities actually collect sufficient funds to not require additional transfers to compensate for the size of the municipality.

The positive coefficient on formulaic transfers provides evidence in favour of our fourth hypothesis – municipalities with more severe socio-demographic conditions (i.e. more pensioners, school-age children, etc.) receive higher discretionary transfers per capita to cover their larger needs.

Finally, we do not find statistical evidence that the margin of victory or loss is one of the determinants influencing discretionary transfers per capita to a municipality, which is in line with our hypothesis. In the final regression specification, the three coefficients for the ‘losing’ side of the cubic transformation formula were both individually and jointly statistically insignificant. However, the coefficients for the ‘winning’ side of the transformation formula (observations where the party in power nationally also won municipal elections) were jointly statistically significant. The signs and values of the coefficients indicate a convex relationship between the margin of victory and discretionary transfers per capita (results not included in Table 2, but available upon request).

Graph 1 in Appendix D gives a visualization of this relationship: the curve of predicted values of discretionary transfers is almost flat where the margin is negative and convex where the margin is positive. The partisan supporter theory states that there should be an upward sloping linear or concave relationship between the percentage of votes the party in power received and the amount of public funds transferred to the municipality. Therefore, the result provides evidence against the “partisan supporter” hypothesis because municipalities are not found to receive proportionally more transfers because of having relatively more voters supporting the party in power nationally. The only significant impact of the margin of victory or loss on the discretionary transfers is seen where the margin equals zero, and we can see a statistically significant jump in transfers, which shows that political parties tend to target more money to the municipalities that they control, regardless of the margin of victory.

Column 5 in Table 2 shows a regression specification that includes both time- and municipality-fixed effects. Despite the remarkably high R-square value of the regression, the results of this regression cannot be treated as reliable due to a possible fixed-effect bias.

Including entity-fixed effects into a panel regression reduces the explanatory power of variables that change only slightly over time (e.g. population of a municipality). In column 5 the coefficient on population is no longer statistically significant, although in fact the variable might still be economically significant. Including municipality fixed effects might also bias other estimates, as discussed by Buddelmeyer et al. (2008). It is difficult to estimate the direction and the extent of the fixed-effect bias for more volatile variables, but the results reported in column 5 allow arguing that there is a positive fixed-effect bias on the alignment variable when municipal-fixed effects are included into the regression.

#### *Robustness Check*

In order to check the robustness of our results we ran the same regression using the data from different periods of time separately. Dividing the original dataset into sub-periods and checking the consistency of the results is one of the methods used in literature to check the robustness of econometric results (Wongchoti & Wu, 2007). Since in Lithuania the municipal elections took place in March 1997, March 2000, December 2002 and February 2007, we divided the collected data into four groups according to the time periods, namely 1998-1999, 2000-2002, 2003-2007, and 2008. Even though the size of the four samples is considerably smaller than of the original sample, the consistency of the results could prove their robustness. Furthermore, it may reveal interesting insights about the dynamics of the alignment effect throughout the years in Lithuania.

The results of the robustness check are displayed in Appendix G, Table 2. In 1998 – 1999, we find evidence that municipalities, which were controlled by the same party as the central government, received on average 26% larger discretionary transfers than other municipalities, controlling for all other factors. The coefficient is statistically significant at 5% level. The contemporary government seems also to have directed more funds to municipalities with smaller populations, as we find evidence that 1% decrease in population would have resulted in 0.15% larger discretionary transfers on average, controlling for other variables (the coefficient is significant at 1% level). Finally, we also find evidence that the government directed more discretionary transfers to municipalities that were in more desperate need of money due to socio-demographic conditions, which are reflected by the amount of formulaic transfers. Even though the coefficient is equal only to 0.0536 (which means that 1% increase in formulaic transfers would result in 0.05% larger discretionary transfers on average, controlling for other factors), it is statistically significant at a 10% level.

Similar trends are observed in more recent years up to 2007. We find that municipalities that were politically aligned with the central government received on average

23% (p-value = 0.073) more discretionary transfers per capita in 2000-2002, and 10% in 2003-2007 (p-value = 0.037), holding other variables constant. The coefficient on population dropped in absolute terms to -0.1214 in 2000-2002 and to -0.1107 in 2003-2007 (both statistically significant at 1% level). Finally, socio-demographic conditions in municipalities became more important while distributing discretionary transfers compared to 1998-1999, as the coefficient on formulaic transfers grew to 0.1227 (significant at 1% level) in 2000-2002 and dropped slightly to 0.0989 (significant at 1% level) in 2003-2007. The results in 2008, regarding population and formulaic transfers, are almost identical to the period of 2000-2002, while the coefficient on 'Alignment' becomes statistically insignificant, though still positive.

The results of the robustness check are consistent with the results of our main regression. Having a consistently positive and statistically significant coefficient on 'Alignment' in all the different periods (except 2008, where the sample size is relatively small), we can reject our first hypothesis that 'municipalities do not receive larger discretionary transfers because of being ruled by the parties in power nationally'. This means that the main null hypothesis of the study can also be rejected. Similarly to our main study, while checking different periods of time, we did not find evidence supporting the 'partisan supporter' hypothesis, as the coefficients on margin of victory or loss were either not statistically significant or showed convex relationship instead of the expected concave relationship. Furthermore, consistently with the main findings, the robustness check revealed that population and social conditions affect the discretionary transfers in a negative and positive way, respectively. Finally, the results of the robustness check gave us reason to believe that the impact of political alignment (between the central government and municipalities in Lithuania) on discretionary transfers is gradually decreasing year by year. This is in line with the Corruption Perceptions Index being improved from 4.6 to 4.9 during the last year; however we cannot say confidently that the alignment effect is not present in Lithuania anymore, since only a small piece of data, covering one single year, indicates that.

### ***Results of Case Study Analysis***

To conduct the analysis of municipal budget dynamics we used municipal budget data for the years 2001 to 2008, because in the year 2000 elections both parliamentary elections and municipal elections were held. During the years 1998 to 2001 Lithuania had four different governments – this kind of variation would be difficult to account for in a case study. Furthermore, a shorter time span of the analysis allows a deeper analysis of recent political and economical developments, resulting in a better understanding of the budget

distribution mechanisms. For the reasons already mentioned in chapter 4, we also exclude observations of Neringa municipality from the case study analysis. Four municipalities which had the largest deviations of budget size from the country average within different periods were selected for the case study analysis: Kaunas city, Siauliai city, Kedainiai district and Utena district.

Graph 2 in appendix E shows the developments of the budget size per capita of the four selected municipalities along with an average budget size among all municipalities. There is an evident upward trend during all of the study period, which can be explained simply by rapid economic growth and a somewhat expansionary fiscal policy. Already in this graph it can be seen that from time to time the budget size of some municipalities fluctuate further from the average value than of others. Graph 3 (appendix F) elaborates on this observation. It depicts the changes (in thousands of Litas) of the budget size per capita for different municipalities and on average.

An evident and interesting discovery is that the volatility of the size of municipal budgets has increased substantially in recent years. Since tax revenue and formulaic transfers by construction cannot fluctuate so widely, the changes can almost fully be explained by fluctuations in discretionary transfers. A not-so-evident discovery can also be made from graph 3: all of the increases in the growth rate of budget size per capita happen in the year prior to an election. The graph shows peaks in 2002, 2004, 2006 and 2008, while municipal elections happened in the last quarter of 2002 and the first quarter of 2007, and parliamentary elections were held in the last quarters of 2004 and 2008.

Increased government transfers prior to elections were also pointed out by a member of the budget committee of one municipality. She expressed an opinion that parties in power nationally, which are able to control discretionary transfers might be trying to increase their chances of success in the upcoming elections by increasing public spending in municipalities (Interview D, March 17, 2010). However, as can be seen from graph 3, some municipalities experience higher budget growth in pre-election years than others, the reasons of which might be explained by a more in-depth analysis.

#### *Kaunas City*

Since the declaration of Lithuanian independence in 1991, Kaunas City has always been the second municipality in terms of size and population, total GDP, municipal budget size etc. in Lithuania after the capital Vilnius. In 2008, the budget of Kaunas City municipality reached 779,770,000 Litas, while in comparison Vilnius had 1,039,519,000 Litas, and Klaipeda – the third Lithuanian city in size, population and economy –

342,004,000 Lit. The population in Kaunas City municipality, similarly to other municipalities, has been decreasing during the whole of our study period since 1998 (395,555 residents) and dropped to 355,586 in 2008. As a result of the economic boom in the beginning of the 21st century and constantly declining population, the municipal budget per capita has been gradually increasing (except for 2007) and reached 2,193 Lit. per capita in 2008 (See Graph 2).

Similar trends of increasing budgets per capita can be observed in other Lithuanian municipalities as well (See Graph 2). However, Kaunas City municipality distinguishes itself for having the most volatile budget growth in nominal terms among all other Lithuanian municipalities (See Graph 3) in the years 2006, 2007 and 2008. During the local elections in 2002, citizens of Kaunas City elected the party called “Tevynes Sajunga – Lithuanian Conservatives”, which ruled the municipality until the early 2007. Meanwhile, in the period of 2006 to the late 2008, the country was ruled by the coalition consisting of “Social Democrats”, “Liberals” and “Peasants – Populists”.

Before the elections of 2007 one could observe a general increase in discretionary transfers among all the municipalities in 2006. Kaunas experienced exceptional benevolence in that year receiving transfers higher by 64% compared to 2005, which was the highest growth in transfers among all municipalities (average growth was 15%). This government’s generosity could be explained by intentions to attract voters during the upcoming local elections 2007, since Kaunas, as the second largest city in Lithuania is of high strategic importance to politicians. However, during the local elections in 2007, Kaunas elected the same party as before – “Lithuanian Conservatives”, which was followed by the most significant decrease in transfers among all municipalities in 2007. As a result, the total budget of Kaunas municipality decreased by 3% as compared to 2006 (average budget growth among all municipalities in 2007 was 6.6%). The story repeated in 2008 because of the upcoming national elections in October, 2008, when Kaunas municipality again received the biggest transfers in Lithuania, which increased the budget by 33% compared to 2007.

One of the interviewees gave an alternative explanation of the exceptionally high budget growth in 2006 and 2008: during this period several politicians from Kaunas were members of the parliamentary budget committee. So, despite not being politically aligned the municipality received higher funding because politicians in influential positions seemed to favour their home city. The interviewee concluded that if a municipality is represented by enthusiastic and knowledgeable people in the central government, attracting additional funds becomes easier (Interview D, March 17, 2010). However, it would be too cumbersome to

control for personal traits and inclinations of public officials and to test this statement with an econometric model.

In conclusion, after taking one of the largest cities in Lithuania as a case study, we do not find evidence supporting the alignment theory, as we do not see Kaunas receiving constantly smaller transfers because of being politically unaligned. This contradicts with the findings of the econometric research; however, it can be argued that Kaunas is a likely outlier from the general trend. There is a possibility that Kaunas, being one of the largest and politically most important cities, is too expensive to favour constantly and too important not to favour at all. As a result, we observe behaviour which reminds of ‘partisan supporter’ or ‘swing-voter’ effects when the central government attempts to favour important groups of voters in order to win the upcoming elections. In Kaunas case, the government tried to target and attract opposing voters periodically, which might be cheaper and more effective than devoting marginally larger transfers every year.

#### *Siauliai City*

Siauliai city municipality is the fourth largest municipality in Lithuania, with approx. 127 thousand residents in 2008. The size of the municipal budget in 2008 was just over two thousand Litas per capita and had been increasing steadily since 2004 (see Graph 3). The only visible decrease of the budget size happened in 2003 when the budget was reduced by about 52 Litas per capita. Siauliai city had the fifth largest increase of the Budget size in 2002, followed by the largest decrease in 2003 among all municipalities. Also in 2008 the municipal budget had the fourth lowest growth.

In 2001 and 2002 the mayor of Siauliai city was controlled by the “New Union” party (NS), which was also in power nationally in the period 2001 till 2004. However, in late 2002 the mayor of Siauliai resigned and was replaced by a member of the Social-Democratic party. After the municipal elections in 2002, another member of the Social-Democratic party became the mayor and held the position until 2007. The Labour Party came into power nationally in 2005, but split up in mid-2006 and was replaced by the social-democrats for the period up to late 2008.

These political developments, together with the dynamics of the budget size depicted in graph 3 suggest the existence of a political alignment effect. While aligned (2001 and 2002) the municipality experienced above-average budget growth, and had below-average growth when not aligned (2003 till 2005). Further political and budgetary developments seem to confirm the alignment effect: Siauliai city was politically aligned for the year 2006, and no longer aligned in 2007 and 2008. Despite having above-average budget growth in 2007,

Siauliai had the fourth lowest growth among all Lithuanian municipalities in 2008. The case of Siauliai city municipality seems to indicate a strong effect of political alignment, which is in line with the quantitative results achieved by the econometric analysis.

#### *Utena District*

Utena district municipality is an average-sized municipality with a population of 48,000, while the average population in Lithuanian municipalities in the same year was around 57,000. The budget size of the municipality of Utena in 2008 was equal to 2,256 Litass per capita.

As illustrated in Graph 3, the budget growth of Utena district has been following the same trend as other municipalities. However, we can notice that in 2007, when the growth of many municipal budgets experienced a larger or smaller decrease, Utena district received transfers from the government larger than any time before. This resulted in the growth of their budget being equal to 15% in 2007 (the average growth among all municipalities was 6.6%). Furthermore, the growth of the budget of Utena district had been increasing constantly from 2005 to 2008 (see Graph 3).

In the case of Utena district we find significant evidence of an effect of political alignment between local and central municipalities, again confirming the results of the econometric analysis. From 2003 up until today Utena district has had an incumbent mayor who belongs to “Social Democrats”. During the national elections in the end of 2004 “Social Democrats” became the most powerful party in the central parliament. Therefore, it is hard to believe that Utena district demonstrates exceptionally high growth rates of its municipal budget from 2005 to 2008 coincidentally. A representative of the municipal administration (Interview B, January 20, 2010) pointed out, that politically more dispersed municipalities tend to have more cyclical budgets, while aligned and misaligned municipalities usually move above and below the general trend, respectively.

#### *Kedainiai District*

Kedainiai district municipality is slightly larger than the average municipality in Lithuania with 63,000 residents and a total budget of 137,700,000 Litass (i.e. 2,170 Litass per capita) in 2008. The graph in appendix E shows that the variation of the budget size has been significant over the 8 year study period. An analysis of these variations shows that the budgetary history of this district seems to give support to the alignment hypothesis.

The mayor of Kedainiai district belonged to the party in power nationally in 2001-2002 (NS party), and the budget of the district municipality increased by 20 percent, compared to a 12 percent increase of the average budget. In 2003 a member of the Labour

Party was elected to the mayor of Kedainiai, and the municipal budget had below-average growth in the subsequent two years, until the Labour Party came into power nationally in 2005. Although the budget growth rates for a majority of municipalities had decreased in 2005, Kedainiai district was among the few districts with higher budget growth than in the previous year. This situation gives substantial evidence to the existence of a political alignment effect found in the econometric analysis. In the following year the district experienced even higher budget growth, which decreased in 2007 when the district was no longer aligned, and became even lower than average in 2008.

### *General Conclusions*

After carefully studying the budget and political history of the four municipalities chosen as case studies we can conclude that three municipalities showed evidence supporting the presence of the 'alignment effect' in Lithuania, which is in line with the results of the econometric analysis. On average municipal budgets have the tendency to increase in the year prior to an election, which would suggest that political parties use sharp increases in discretionary transfers as a means to gain elector support. The case of Kaunas city municipality seems to support this finding, while showing no evidence of a political alignment effect on the amount of discretionary transfers. However, analyses of the other three cases – Siauliai city, Utena district and Kedainiai district municipalities – have shown substantial evidence in favour of the 'alignment' hypothesis. We conclude therefore, that the alignment effect is not present in all municipalities. Some of them, for example Kaunas city municipality, might be able to exert additional political power and receive higher transfers even without being aligned, but through charismatic politicians with advanced lobbying skills.

Interview results provide an additional insight to these findings. Interviewed politicians described the relationship between party colleagues in different levels of government as being close and friendly, and agreed that in some cases such relationships can be used to extract additional funding from the government (Interview C, March 9, 2010), Interview F, March 10, 2010). A member of the municipal council of one municipality also revealed that a close relationship between regional and national politicians may help attract more funds. Lobbying for a certain investment project that would benefit some municipalities more than others is common practice in the parliament, and politicians are more likely to support a project if it is aimed at a municipality controlled by a party colleague (Interview B, January 20, 2010). Most national investment projects are selected by ministry officials and the criteria of selection are not explicitly clear, therefore it is beneficial to have access to

influential politicians with lobbying skills. All in all, although political alignment helps to increase a municipality's budget substantially, it is not an indispensable condition for a municipality to be able to attract more funds.

## 6 Analysis and Discussion of Results

Having obtained the results from the regression analysis and the case study, we can explicitly answer our research question. First of all, based on the analysis of Lithuanian laws and statutes, as well as interview data, we established **the key determinants of public budget allocation for districts and municipalities**. They consist of socio-demographic variables, such as (1) the total population of the municipality (2) the number of children aged from 0 to 6; (3) the number of pensioners; (4) the number of children aged from 7 to 17; (5) the total length of roads and streets in the municipality; (6) the area of the municipality; (7) the total area of educational institutions in the municipality; (8) the total area of land covered with buildings and (9) the area of land which has a resort status.

Meanwhile, the econometric analysis and the case study confirmed the socio-demographic conditions to be influential while determining the size of funds allocated to municipalities. The results of both types of analysis give evidence in favour of the third and fourth hypotheses regarding the influence of formulaic transfers and population on the amount of discretionary transfers distributed to municipalities. Furthermore, the research revealed that **the public budget allocation pattern is affected by political incentives to distribute more money to particular municipalities in Lithuania**.

Although our findings do not support 'partisan supporter' theory in Lithuania, the results of our research provide statistical evidence that Lithuanian municipalities on average receive 11.89% larger discretionary transfers from the central government because of being ruled by the parties in power nationally. This indicates that the hypothesis about the political alignment having no influence on government transfers must be rejected. These results are consistent with the findings obtained in Portugal in 2009, where M. Migueis (2009) investigated the alignment effect, and found that politically aligned Portuguese municipalities received on average 19% larger discretionary transfers.

The consistency of the results is not surprising since the two countries are very similar in many aspects including economic, demographic and political conditions. However, what makes this study unique is the fact that, to our knowledge, this is the first time when the pattern of distributive politics depending on political alignment between local and central governments is investigated in the Baltic countries. Therefore, it provides new insights

concerning distributive politics in the small transition economies in Eastern Europe, which are not only similar in terms of economics, demographics and politics but also share a 20 years long history of independence. As a result, our findings could be applicable to a certain extent to such countries as Estonia, Latvia, Slovakia, Hungary and other transition economies.

Migueis (2009) in his study identified a number of possible reasons why leading parties in the central government could direct additional funds to aligned municipalities. The interviews that we conducted with a political scientist and a member of parliament largely support Migueis' (2009) conclusions. Firstly, parties in power nationally might want to satisfy politicians who belong to the same party and work in municipalities by providing them larger budgets to work with. This act would contribute to the greater solidarity and more efficient work inside the party. (Interview G, March 10, 2010)

Secondly, having their own people working in a municipality might help to direct the discretionary transfers more specifically inside the municipality. If, for example, a leading party in the central government has personal incentives to support friendly media channels in different regions of Lithuania, it could do this more easily in the municipalities that are controlled by party colleagues. (Interview E, March 18, 2010)

Thirdly, in Lithuania the main candidates to take positions in the parliament after the national elections are local politicians working in municipalities. Those, who are the most active in popular decision making and spend funds in favour of the voters, have the highest chances to be elected. As politicians in the parliament are concerned with being re-elected and ensuring the success of their party during the next elections, they tend to provide disproportionately more funds to municipalities controlled by party colleagues. In such a way, the merit of the work done by the municipal council would be attributed mostly to the political party in power (Interview E, March 18, 2010). Finally, a leading party in the central government could devote more money to municipalities where they had won locally in order to gain momentum and be re-elected in upcoming elections to the parliament. (Migueis, 2009)

The sub-optimal distribution of public funds across municipalities in Lithuania seems to be a gradually decreasing problem, as shown by the results of the robustness check. The alignment effect was the most evident in 1998 – 1999 and decreased gradually until 2008, when the latest data is available. A similar trend has been identified by Transparency International which increased Lithuania's Corruption Perceptions Index to 4.9 in 2009, which is the highest and best evaluation over the last 8 years. Furthermore, the robustness analysis

revealed that socio-demographic conditions (reflected by the amount of formulaic transfers) in municipalities are gradually becoming a more influential factor in determining discretionary transfers. Thus, we have reason to believe that the importance of equalization of welfare is gradually replacing personal incentives to allocate more funds to politically aligned municipalities when distributing public funds across Lithuania.

Regardless of the above, the impact of political alignment on the allocation of public funds is still evident, as shown by our regression and case study analyses. Having in mind the current macroeconomic situation in Lithuania, corruption is especially undesirable, as it impairs the country's recovery. Even though the sums of money distributed because of political alignment are not substantial and constitute to only about 1% of a municipality's overall budget, we believe that this is still an undesirable practice. As the money is distributed solely on political grounds, it is likely that the funds are used inefficiently and more efficient ways to distribute the money should exist. Therefore, in accordance with the opinions expressed by several interviewees, we provide two solutions which could plausibly limit the extent to which public funds are allocated sub-optimally.

First of all, information on the amount of money distributed to Lithuanian municipalities could be made easier to access for the public. Today it is rather difficult to find and collect data about all the different sources of money received by municipalities (Interview D, March 17, 2010). It is even more difficult to receive information on how the municipal budget has been spent. Thus, if there was a conveniently designed online database, where every citizen could see how much discretionary, formulaic and other transfers his or her municipality has received (as well as what projects these transfers are meant to support), there would be more transparency in the Lithuanian distributive politics. It would be even better if people could see constantly how the money is actually spent by the municipality. We believe that such kind of project is realizable and would be highly encouraged by the Lithuanian tax payers, since they have a right to follow the usage of their money.

The second solution might be to remodel the system of distribution of national funds. Our results suggest that socio-demographic conditions, reflected by the amount of formulaic transfers, is a significant factor determining discretionary transfers. The significance of this variable also reveals that the formulaic transfers' tool might be not completely effective. Instead of distributing the extra money to municipalities via discretionary transfers, politicians could augment the formula so that all the required funds are distributed with just one budgetary instrument. In this way the size of a municipal budget would depend solely on the social, economic, and demographic conditions inside the municipality, and the

distribution pattern of the funds would be completely defined by law. The government could reserve the right to finance the projects of national importance directly.

## 7 Limitations of the Study and Suggestions for Further Research

In order to increase the applicability of the research and to make the contribution to the existing academic literature more comprehensible, the following section develops and discusses possible limitations of the study. By understanding the limitations future researchers can build on the research described in this paper and improve it.

### *Regression Discontinuity Design*

The regression discontinuity design belongs to a group of research designs called quasi-experiments. This type of research design differs from a true experiment in a sense that it lacks random assignment. In particular, the regression discontinuity design contains a forcing variable which attributes a particular treatment to the treatment variable (in our case, the value to the binary treatment variable –  $Align_{i,t}$ , is not randomly attributed but rather determined by the value of the forcing variable –  $Margin_{i,t}$ ). Although this scientific research method is considered to be highly useful (especially in social sciences), it possesses both merits and limitations. Particularly, it minimizes threats to external validity, while bringing more threats to internal validity. (Trochim, 2006)

As the regression discontinuity design is a natural experiment, rather than a well-controlled laboratory setting, and its natural environment is not affected by artificiality, the results obtained from this quasi-experiment can be generalized and applied to other cases or populations with more confidence. However, due to the lack of randomisation it becomes more difficult to exclude confounding variables, which makes it harder to control for omitted variable biases, reverse causality and other possible problems. As a result, we lose confidence in establishing a causal relationship between the variable of interest and the dependent variable, which hurts internal validity of the study. (Trochim, 2006)

Nevertheless, the regression discontinuity design is considered to be the closest to the experimental design among all types of quasi-experimental designs. Furthermore, relatively more observations in the sample can provide the same power to the regression discontinuity design as to a traditional experiment (Trochim, 2006). In our case, we believe that a sample consisting of 649 observations is sufficient to draw inferences of causal relationship. Moreover, employing the regression discontinuity design allows us to eliminate the reverse causality problem, recognized in similar studies by Larcinese et al. (2007) (as argued in page

17), which relatively intensifies the causal relationship and increases the internal validity of our study at least to some extent. (Migueis, 2009)

#### *Data Limitations*

The interviews with the politicians working in municipalities revealed that discretionary transfers, which are reported in municipal budgets, are not the only money discretionarily distributed to municipalities by the central government. In addition to the budget income there are also supplementary transfers, which amount to approximately a half of the size of discretionary transfers on average, and which deviate substantially from municipality to municipality. Since they are distributed discretionarily by the central government, they could be added up with the discretionary transfers and used as a dependent variable. However, this money is not reported as a source of municipality's budget income, which makes it hardly possible to collect the historical information about it. It would require visiting headquarters and archives of all the 60 municipalities in Lithuania, and would be exceptionally expensive and time consuming (Interview D, March 17, 2010).

The fact that these supplementary transfers are distributed discretionarily by the central government, they are not reported as municipality's budget income, and they are difficult to track by an ordinary citizen, make it very convenient to use them as an instrument to target particular municipalities and groups of voters. Therefore, the absence of this data in our dataset is likely to bias our results regarding 'political alignment effect' and 'partisan supporter effect' towards zero. Even though we find evidence that 'political alignment effect' is present in Lithuania, having our dataset augmented by supplementary transfers would most probably make our regression coefficients more different from zero and findings even more convincing.

#### *Omitted Variable Bias*

There is a possibility that excluding municipality fixed effects from our principal regression specification might cause omitted variable bias, which means that the estimates of coefficients on the independent variables could be either underestimated or overestimated (depending on whether the municipality fixed effects are positively or negatively correlated with other variables, and whether they have positive or negative impact on discretionary transfers). However, as our regression contains a few variables that do not vary over time significantly, by including municipality fixed effects, we would undoubtedly cause the fixed effects bias. It means that municipality fixed effects would capture the impact of population (it changes only marginally from year to year) and election results (they are constant for a number of years in a row, depending on the frequency of elections), and, as a result, the

coefficients of these variables would be biased (Buddelmeyer et al., 2008). We cannot do that since our research question attempts not only to investigate the impact of political determinants on public allocation but also to identify the key determinants of public fund allocation altogether.

In order to be secure that excluding municipality fixed effects does not cause serious omitted variable bias in our study, we ran a regression controlling for municipality fixed effects. The results indicated that in both regressions, with and without municipality fixed effects, all the respective coefficients, except on population, had the same signs and significance levels. Meanwhile, the coefficient on population became statistically insignificant, as expected.

#### *Suggestions for Further Research*

As a result of the presence of the three major threats to our study identified above, we provide suggestions how further research on the adequate topic could obtain even more robust results. First of all, we would suggest trying to use a research design different from the regression discontinuity design, which is a quasi-experiment. It is an adorable methodology in our case, since it allows us to eliminate the reverse causality between election results and the distribution of funds. However, there are also other ways to eliminate this problem. E.g. if a researcher has a large time and funding capacity, (s)he could conduct a special survey across the districts of Lithuania and use its results instead of election results, as suggested by Eva Johansson (2003). Secondly, having more funds and time, one could extend the dataset by visiting archives of all the Lithuanian municipalities and collecting data regarding non-budgetary discretionary revenues collected by municipalities. Finally, the dataset could be extended by prolonging the study period. It would result in more significant variation of populations in municipalities, and would enable to control for municipality fixed effects.

## **8 Conclusion**

Almost every day Lithuanian newspapers and other media channels escalate issues of corruption in the country's public sector. Corruption is even more detrimental to Lithuania today, when the country is suffering from a severe economic downturn. Our paper, thus, investigates a possible area for corruption, which might not be immediately obvious to an ordinary citizen, but is present in many countries as proven by relevant literature – the distribution of government grants to municipalities.

The literature on the distributive politics has developed and confirmed a number of theories explaining why some regions in various countries receive disproportionately larger

shares of national funds. Based on the relevance to the Lithuanian case, the availability of data and the presence of a recently developed, proper and advantageous methodology, we chose to test the theories of the ‘alignment effect’ and ‘partisan supporter effect’. First of all, we made a research of statutes and laws in order to identify the key determinants of the size of government transfers to municipalities. Secondly, we tested these determinants, as well as relevant political variables empirically by using an econometric model, suggested by Marco Migueis (2009). Finally, we provided a discussion of a case study of four Lithuanian municipalities, which gave us greater insights about distributive politics in Lithuania and greater confidence about the robustness of the results of the regression analysis.

After conducting the analyses we found that, according to the statutes and laws, the key determinants of public budget allocation for districts and municipalities in Lithuania are certain socio-demographic factors, including population. The econometric analysis confirmed that these factors have significant influence on the transfers received by municipalities. Furthermore, it was also revealed that the public budget allocation pattern is affected by political incentives to distribute more money to particular municipalities in Lithuania. Even though we did not find evidence supporting the ‘partisan supporter’ theory, we found empirical evidence that an average-sized Lithuanian municipality can expect to receive on average 12% more discretionary transfers if it is politically aligned with the central government. For an average-sized municipality this is a rather significant benefit since it could use this money to employ around 70 additional minimum wage workers for the whole year. The results of the case study of the four municipalities supported the findings from the econometric analysis, as three out of four investigated municipalities showed substantial evidence in favour of the existence of an ‘alignment effect’. This result allows us to reject the null hypothesis, that the Lithuanian budget allocation scheme is based on economic and socio-economic rationale rather than political preferences or incentives.

The main reasons motivating parties in power nationally to direct more funds to politically aligned municipalities include the following: an attempt to enhance solidarity and efficiency of work inside the party; convenience to direct the discretionary transfers more specifically inside a municipality; the possibility to enhance chances for party colleagues working in municipalities to be elected to the national parliament during the next elections; and the possibility for a party who won municipal elections in some municipalities to gain momentum and be re-elected to the national parliament. Although in our study we found evidence that the ‘alignment effect’ is gradually shrinking in Lithuania, the problem still

remains. Therefore, some actions, such as increased transparency of the flows of national funds, or the remodeling of the system of distribution of national funds, should be taken.

To our knowledge, our study is the first attempt to investigate the effect of political alignment between local and central governments in the Baltic countries. Thus, it contributes to the existing literature on distributive politics by providing new insights regarding this topic in small transition economies in Eastern Europe. Furthermore, our study builds on a recently developed methodology, adding to the understanding of its applicability. By complementing the M. Migueis (2009) model with a case study of four Lithuanian municipalities we improve the research design even more and ensure higher reliability of the results.

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## Appendix A: Case Study Protocol

### *Questions for members of municipal councils and administration:*

- How large are the usual variations of government grants received by your municipality year on year?
- How many government-financed projects are currently in process in your municipality? What kind of projects are these?
- Could you please discuss the history of government-financed projects in your municipality? What kind of projects were there? How difficult it generally is to attract government financing for a new project?
- Do you feel changes in the attention your municipality receives from the central government after a parliamentary election?
- How does this reflect (if at all) in the amount and structure of government funding your municipality receives?
- How would you describe your relationship with the party colleagues in parliament? Is the relationship close, could you describe it as friendly? How friendly?
- Do you think some members of the municipal council might expect and/or request special attention from their party colleagues?
- Do you think your municipality receives such attention? If so, in what way?

### *Questions for members of Parliament:*

- How large, to your knowledge, are the fluctuations in the amount of government funding appointed to municipalities?
- In your opinion, what are the possible reasons for these fluctuations (economic, political, socio-demographic, etc.)
- What are the main criteria, that determine the amount of government transfers allocated to a municipality?
- What are the main criteria, that determine the allocation of funds to government-financed investment projects in municipalities? At what institutional level are the projects selected?
- How can a change of central government (e.g. parliamentary elections) affect the size of a municipal budget?
- Is it possible for municipal politicians to attract additional government funding through party colleagues in the government or the parliament? How? How often do you observe such a behavior?

## Appendix B: Descriptive Statistics

Variables	Mean	Median	S.D.	Min	Max	Obs.
Discretionary transfers (thousands LTL)	3598.5	2330	4998.01	357	49897	639
Formulaic transfers (thousands LTL)	15056	7191	31380.8	64	281871	639
Total revenue (thousands LTL)	74910.8	48414	104303	7442	1039519	639
Tax revenue (thousands LTL)	50703.4	34900	63128.3	3897	639045	639
Population	58601	37527	83615	5256	565881	649
Alignment (leader)	0.356	0	-	0	1	649
Margin of win/loss	-0.076	-0.077	0.228	-0.705	0.603	649

The table gives descriptive statistics of the decomposition of municipal budgets and variables used in regressions for the sample of 649 observations used in regressions (i.e. after excluding the outlier Neringa municipality). Please note that the regressions use natural logarithms of the variables *Discretionary transfers*, *Formulaic transfers*, and *Population*.

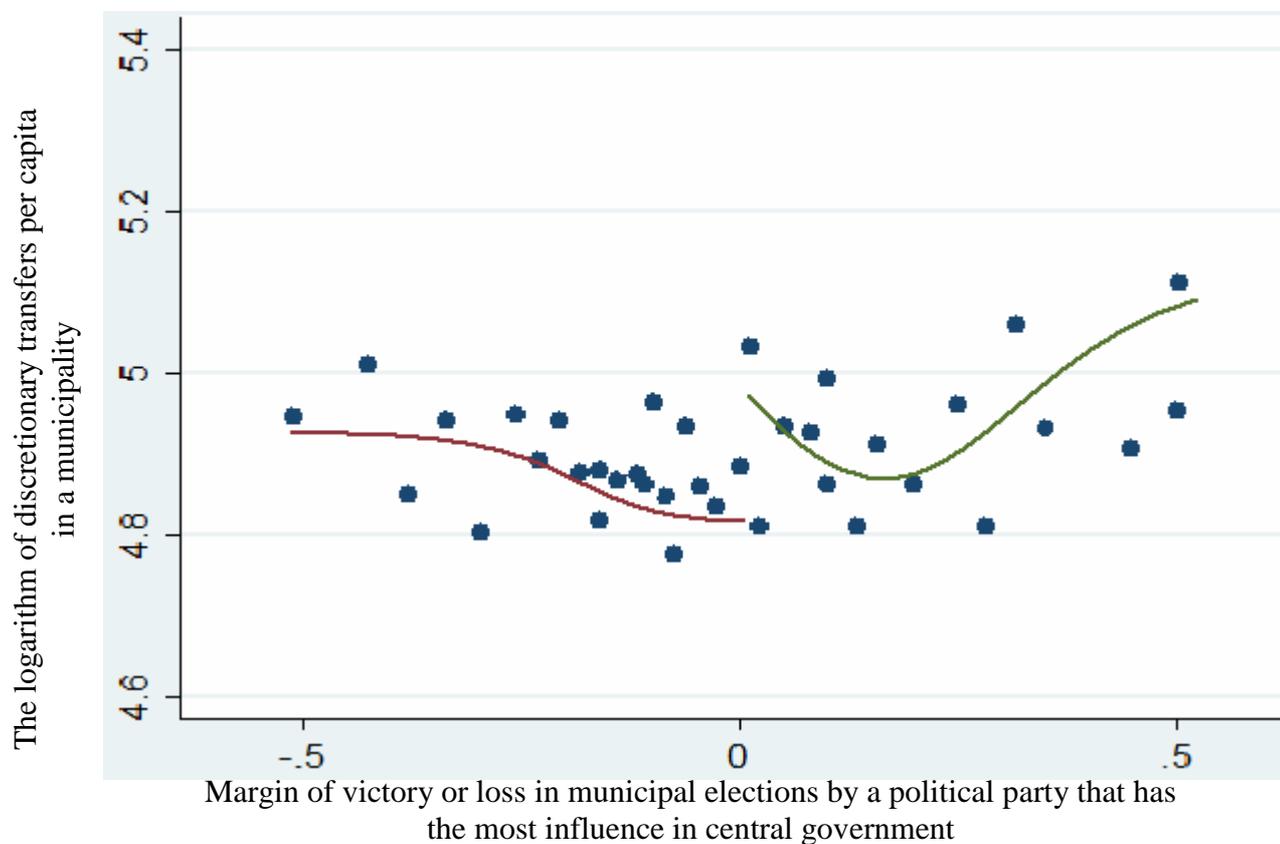
Appendix C: Table 1

Dependent variable: Log per capita discretionary transfers	(1)	(2)	(3)	(4)	(5)
Alignment	0.1419* ( 0.095 )	0.1276 ( 0.142 )	0.1540** ( 0.033 )	0.1189** ( 0.044 )	0.1716*** ( 0.008 )
Log population	-	-0.1301*** ( 0.001 )	-0.1344*** ( 0.000 )	-0.1270*** ( 0.000 )	0.1219 ( 0.691 )
Log per capita formulaic transfers	-	-	0.2452*** ( 0.000 )	0.1014*** ( 0.000 )	0.0511*** ( 0.001 )
Control for marginal victory or loss by the party in power nationally	YES	YES	YES	YES	YES
Control for year fixed effects	NO	NO	NO	YES	YES
Control for municipality fixed effects	NO	NO	NO	NO	YES
<i>Adjusted R</i> <sup>2</sup>	0.070	0.158	0.491	0.833	0.911
<i>N</i>	639	639	639	639	639

*Note:* The constant is included in all regressions, but the coefficient is not reported. P-values are reported in parentheses. \*, \*\* and \*\*\* denote significance at 10, 5 and 1 percent levels, respectively.

## Appendix D: Graph 1

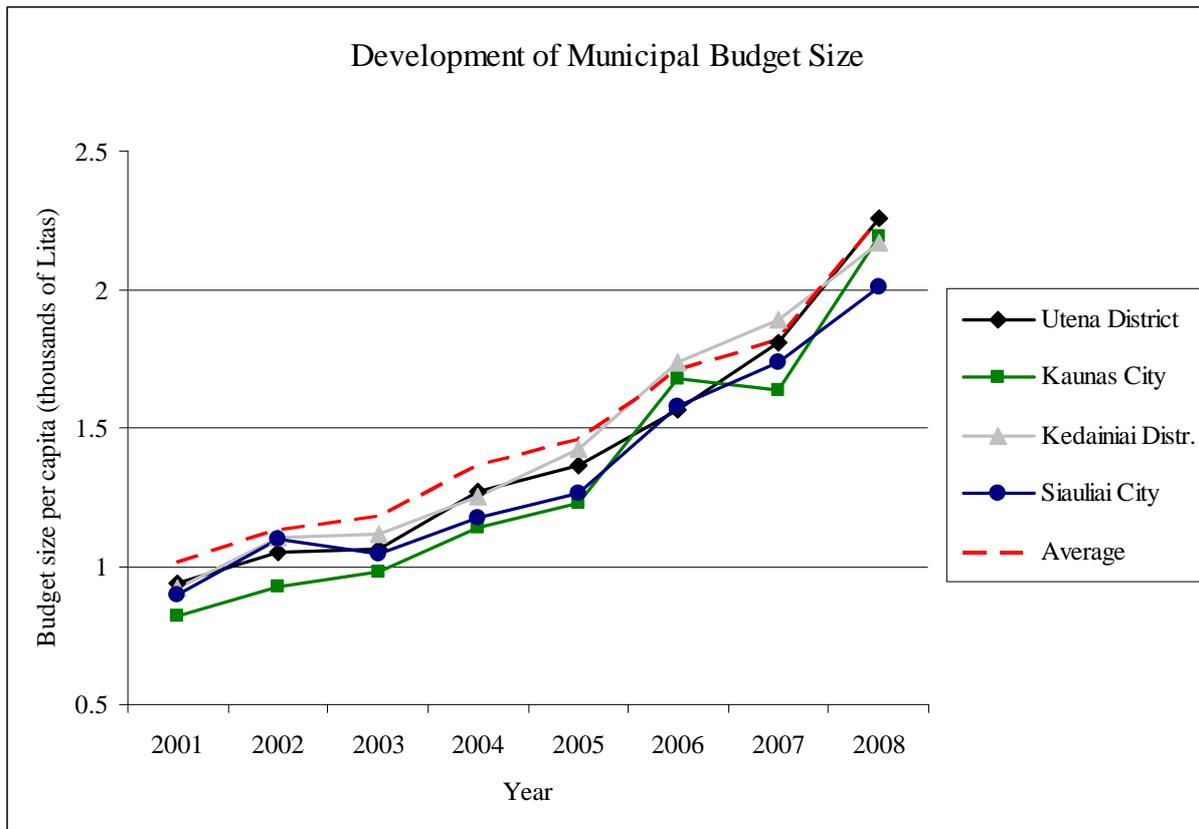
Graph of regression fitted values



*Note:* This graph was created by dividing the dependent variable into 36 intervals, according to the value for Margin of victory or loss. Then, averages of each of the ordered intervals were taken – therefore, the solid dots represent the average size of discretionary transfers for a given margin of victory or loss. The solid line represents the predicted value of discretionary transfers using the regression results of column 4 in table 1.

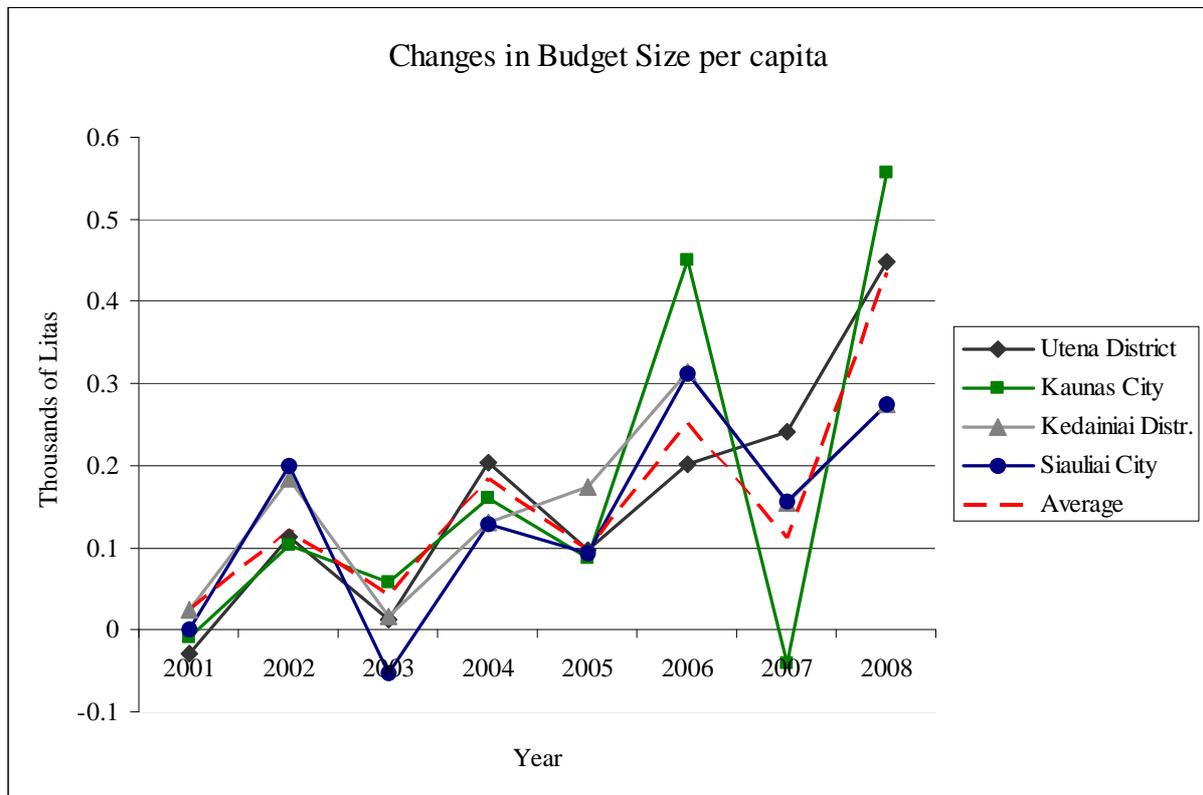
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Appendix E: Graph 2



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Appendix F: Graph 3



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Appendix G: Table 2

<b>Dependent variable: Log per capita discretionary transfers</b>	<b>1998-1999</b>	<b>2000-2002</b>	<b>2003-2007</b>	<b>2008</b>
Alignment	0.2583** ( 0.042 )	0.2274* ( 0.073 )	0.1042** ( 0.037 )	0.0650 ( 0.198 )
Log population	-0.1496*** ( 0.000 )	-0.1214*** ( 0.000 )	-0.1107*** ( 0.000 )	-0.1276*** ( 0.001 )
Log per capita formulaic transfers	0.0536* ( 0.070 )	0.1227*** ( 0.000 )	0.0989*** ( 0.000 )	0.1227*** ( 0.001 )
Control for marginal victory or loss by the party in power nationally	YES	YES	YES	YES
Control for municipality fixed effects	NO	NO	NO	NO
Control for year fixed effects	YES	YES	YES	YES
<i>Adjusted R</i> <sup>2</sup>	0.491	0.519	0.812	0.620
<i>N</i>	108	177	295	59

*Note:* The constant is included in all regressions, but the coefficient is not reported. P-values are reported in parentheses. \*, \*\* and \*\*\* denote significance at 10, 5 and 1 percent levels, respectively.