The Effects of Electoral Formula on Public Finances - Evidence from Hungarian municipalities

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Abstract

In this paper I provide evidence on effects of plurality and proportional electoral formula on fiscal outcomes. In Hungary different voting regimes are applied to elect the members of local councils: in places where more than 10,000 people live a variant of proportional voting system is used, while below a variant of plurality voting system is used. Not only the electoral formula, but the district magnitude (the number of council members), varies at different population thresholds. The setting allows me to apply a sharp regression discontinuity design to identify the causal effect of the electoral formula on political and fiscal outcomes, and at the same time control for variation in district magnitude. My findings show that the electoral formula directly affects the composition of municipal finances and intensity of political budget cycles, but has no effects on their overall size per capita spending. Interestingly the formula has no effect on political outcomes. Moreover, the district magnitude has not got significant effects on any outcome variables. And finally there is no evidence that either the electoral formula or the district magnitude has an effect on politicians rent-extraction activity (corruption offences). The empirical findings on the composition of public finances are in line with the theoretical predictions of (Persson and Tabellini, 2000) and (Lizzeri and Persico, 2001).

Keywords: public finances, electoral formula, district magnitude

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1. Introduction

In the relationship between politics and economics much empirical focus has been put on the relationship between the timing of elections and fiscal decisions e.g. political budget cycles, and less empirical focus on the effect of electoral rules on political and fiscal outcomes. However, electoral rules not only affect which politicians get elected, but their policy platform and consequently their implemented policies too. Under different electoral rules politicians have to target differently their voters, so politicians commit to different policy platforms. Meaning that the electoral system not only influences who gets in power, but what kind of policies would be implemented. The differences between the French legislative elections and the German federal elections demonstrate the crucial role of electoral formulas. In France a version of plurality voting formula is used, in Germany a variant of proportional system is applied. The votes cast are transformed to mandates differently in each country. In the 2017 French elections the REM&MoDem party coalition, supporting President Macron, gathered 32.33% of the votes in the 1^{st} round of the elections and after the 2^{nd} round they obtained 60.66% seats in the National Assembly. While in Germany the Chancellor Merkel lead CDU&CSU coalition obtained 32.93% votes on the party list which resulted in 34.7% seats in the German Federal Parliament. The example suggests that the formula plays a crucial role in the political results, and thus on policies.

Though the electoral formulas are very different in the world, their consequences on the politics is well studied, but their consequences on the implemented economic policies are not clear-cut. The question how different electoral formulas affect political outcomes and fiscal outcomes is less studied empirically. In this paper I provide evidence on effects of *plurality* and *proportional* electoral formulas on fiscal outcomes. In the theory, (Lizzeri and Persico, 2001) provide theoretical predictions related plurality vs. proportional systems. In their model they compare plurality and proportional systems. They show that as in plurality system the politicians want to get just 50%+1

vote they prefer direct money transfers to convince voters[3]. While under proportional systems the difference between winner and loser matters as well, thus politicians try to get the support of most voters possible by providing more public goods. Their results are driven by the fact that under different systems the role of *margin of victory* is different. Under plurality systems only the fact of victory matters, thus the easiest way to guarantee victory is by promising personally targeted transfers (money in their model). Under proportional system the margin of victory is crucial, because the spoils of the office is distributed in proportion of the vote share. Consequently politicians try to get the largest share of votes possible and it is cheaper for them by providing broad transfers (public goods in their model) than personally targeted money transfers. My analysis also provides support of stronger political business cycles under plurality systems (Persson and Tabellini, 2000) in the form of larger tax cuts in election years. The underlying mechanism is that under the plurality system politicians have a direct contact with the voters.

In Hungary the members of the municipal councils are elected in a different way in municipalities with a population below 10,000 inhabitants, and above the cutpoint. Below a *bloc voting system* is used, in one municipality wide district the voters have as many votes as places are available in the council - those who receive most of the votes go to the council - so strictly speaking it is a plurality system where the size of the margin of vote has no effect on the final mandate allocation. Above a *mixed member proportional voting system* is applied, 60% of councilmen are elected in single-member districts with plurality rule and the remaining 40% obtains their mandate through municipality wide compensation list (the system originates from Germany, and its variants are used in many countries around the world e.g. New-Zealand, Wales, Scotland, before it was used in Italy too). The compen-

[3]In their setting there are only two politicians, so plurality means majority at the same time.

sation lists are made of the votes cast on loosing candidates in the districts. The fact that the loosing candidates' vote is taken into account at the final distribution of the mandates makes the role of the margin of victory important at the single-member district competition too. Because of the different role of the *margin of victory*, I consider the bloc voting system a plurality system, and the mixed-member proportional system a proportional one[4].

The setting, at 10,000 population size the electoral system changes discontinuously, allows me to compare political and fiscal outcomes under the two electoral rules by implementing a regression discontinuity design around the 10,000 cutpoint. My analysis is restricted to the period between 2002-2008, because of data limitations and institutional changes. The data is available from 2002 till 2011, but from 2006 the financing of municipalities started to change for many reasons e.g. investment programs started to be phased out and replaced by European Union funded programs and statistical changes were introduced too, so the last year that I keep in my analysis is 2008. However, the dataset allows me to do several robustness checks.

Based on my analysis, the two electoral systems, surprisingly, have not got different political consequences below and above the 10,000 cutpoint. Local councils are not more fragmented, parliamentary parties are not more present, the gender composition and education level in the council is similar in the two types of municipalities. However, the fiscal outcomes are different: under the proportional system more investment occurs in per capita terms, and under the plurality system the taxation is lower in election years than under proportional electoral rule. In line with the (Lizzeri and Persico, 2001) model, under proportional electoral system broad goods, general investment projects are provided. Moreover under the plurality system political budget cycles are stronger as (Persson and Tabellini, 2000) predicts, in the form of extra tax cuts[5].

[4]The terminology is consistent with other economic studies e.g. (Persson et al., 2007).

[5]Opposed to these theoretical predictions, (Bouton et al., 2018) shows that under pro-

These results not only confirm the theoretical predictions on the effects of electoral formula, but refutes theories competing theories on the effects of number of seats allocated in a district, in other words the district magnitude. (Ferejohn, 1986), (Persson et al., 2000) and (Milesi-Ferretti et al., 2002) suggest higher district magnitude is intensifying the political competition, as more candidates running for office, and reducing rent-extraction by politicians. But there are no significant differences in the number of competitors, in the size and in the composition of expenditures per capita at other cutpoints where only the district magnitude changes, hence the main reason of differences in municipal finances is the electoral formula. Moreover, the corruption related offences (rent-extracting), and offences in general, do not significantly change at any analysed cutpoints. The findings are robust for controlling for observable municipal characteristics.

The main contribution of this paper is showing that district magnitude in itself has no political and fiscal effects at municipal level, but it is the electoral formula that determines directly the composition of municipal finances. More precisely, I provide causal microeconometric evidence of the (Lizzeri and Persico, 2001) and (Persson and Tabellini, 2000) theoretical models by applying an RDD strategy that addresses the endogeneity issues often present in empirical political economy papers highlighted by (Acemoglu, 2005). There are several articles that deal with the question of the effects of proportional electoral systems on public finances: (Milesi-Ferretti et al., 2002), (Aidt et al., 2006), (Persson et al., 2007) and (Funk and Gathmann, 2013). However, these studies cannot completely resolve all the endogeneity issues present in political economy context either because they are cross-country comparisons so there is still too much unobserved heterogeneity between the observations or because the effect of confounding factors cannot be ruled out e.g. fran-

portional systems more uneven allocation of public goods can occur than under plurality systems, as the proportional system gives incentives to politicians to allocate more resources in densely populated areas with high turnout.

chise extension. With relation to other micro studies, my analysis' advantage that it compares the whole electoral system and not individual politicians' incentives how to target their voters like in e.g. (Stratmann and Baur, 2002), (Gagliarducci et al., 2011). This paper demonstrates: there is no evidence of significantly higher expenditures per capita under different voting systems, but the composition of expenditures is different. Because of proportional electoral formula the provision of public goods is higher than under plurality rule and the plurality rule leads to stronger political budget cycles (higher tax cuts in election years) than a proportional system.

2. Literature review

There were many studies investigating the effects of different aspects of the voting system on general economic outcomes: the relationship between voter franchise and redistribution (Meltzer and Richard, 1981), the economic effects of asymmetries in political turnover among competing parties (Azzimonti, 2015), the role of asymmetric information between voters and politicians (Coate and Morris, 1995), the party organization and electoral outcomes (Castanheira et al., 2010), the effects of number of parties on public good provision (Lizzeri and Persico, 2005), the interaction between policy platforms and election outcomes (Lee et al., 2004), (Ferreira and Gyourko, 2009) and (Dell, 2015), the effects of direct and representative democracy (Olken, 2010) and (Hinnerich and Pettersson-Lidbom, 2014) and finally the effects of single round vs. runoff elections (Chamon et al., 2009), (Bouton, 2013) and (Bordignon et al., 2016). The paper is related to this literature.

In general, three different characteristics define the electoral system: the ballot structure, the district magnitude and finally the electoral formula. In voting systems, the higher the district magnitude is, the more candidates participate in the contest. Consequently, the office is more valuable to the candidates and gives incentives to lower rent extraction (lower corruption) (Ferejohn, 1986) (Persson et al., 2000). The electoral formula, plurality vs.

proportional rule, has effects on corruption too. Under plurality systems the punishment from voters is more severe, when the politicians loose they loose everything, and at the same time incumbents have stronger incentives to perform. Which leads to less corruption and stronger political business cycles under plurality systems (Persson and Tabellini, 2000) pp230-233 Even though there are different mechanisms present because of the electoral formula and the district magnitude, in general large districts (single, country-wide district) are coupled with proportional electoral formula, and small districts (multiple districts in the country) with plurality formula (Persson and Tabellini, 2000) Chapter 8. To disentangle the effect of the last two is challenging both in theoretical models and in empirical studies (Persson et al., 2003).

The effect of different voting systems on public finances has been theoretically studied before. (Myerson, 1993) explicitly investigates the effects of alternative electoral systems on economic policy (rank-scoring rules, approval voting and single transferable voting). He demonstrates what kind of incentives could be present in voting systems that consequently makes politicians to create inequalities among homogeneous voters. In his setting politicians promise different transfers and depending on the voting system they target different groups. One of his predictions is that more fragmented party system will lead to higher expenditures. In (Austen-Smith, 2000) already departs from the majoritarian system, the author compares majoritarian and proportional rules in a theoretical model where he allows agents to differ over the productivity, consequently they prefer different redistribution systems. However, from a theoretical point of view (Lizzeri and Persico, 2001) provides more relevant game theoretical model for my case, the authors compare more directly the electoral incentives under plurality and proportional systems. In single member district candidates can offer either public goods or money redistribution to their voters. Public goods provide the same utility to every voter while money redistribution only gives utility to the beneficia-

ries. Their main result is that under winner-take-all system public goods are provided less often, as they cannot be targeted opposed to money transfers. The mechanism behind the results is that under plurality system the *margin of victory* does not matter, while under proportional system it is important - consequently, public good is provided less often, especially when it is desirable. (Bouton et al., 2018) compares the two systems too, they highlight the differing importance of electoral sensitivity under the two regimes, and that under proportional system politician tend to allocate more public goods to more densely populated areas with higher turnout than under plurality systems. With respect to empirical studies first (Milesi-Ferretti et al., 2002) have to be mentioned, the authors analyse OECD and Latin-American countries. After developing a theoretical model which predicts that under proportional (plurality) system general transfers (public good in their terminology) favoured. They divide government spending into transfers and purchases of good and services, while the first one could be targeted based on social characteristics,the latter is targeted through geographically. Consequently proportional systems articulate more general interests, while plurality system promote local interests. The authors do not distinguish between universal and targetable expenditures, the difference comes from the geographical targeting characteristics. In the empirical exercise they find proof of the relation between proportionality and transfer spending. The crucial element of their analysis the way they calculate proportionality: they use district magnitude, the number of seats allocated in a constituency, and deviation from proportionality, comparing vote share to mandate share. However, as the voting systems strongly differ from one country to the other, these measures suffer from limitations and endogeneity problems.

Another cross country empirical study is (Persson et al., 2007), where the researchers analyse the relation between electoral rules and government spending in parliamentary democracies. They argue that electoral systems directly not, but indirectly influence government spending. As electoral sys-

tems define the party structure (like (Myerson, 1993)), the party structures consequently influence the spending. Proportional systems lead to more fragmented governments and thus driving up expenditures, opposed to plurality systems where governments less fragmented, e.g. one party governs, and thus less public spending occurs. In their empirical exercise they show evidence of these mechanisms. Next (Aidt et al., 2006) investigates the effect of spreading democracy on fiscal outcomes in Western European countries between 1830-1938. And they find that switching from majority to proportional rule did not increase government spending and surprisingly it held back health, education and welfare spending. And finally, (Funk and Gathmann, 2013) in their diff-in-diff analysis of Swiss cantons switching to proportional electoral systems find that under proportional systems spending shifts toward broad goods e.g. education and there is less spending on geographically targetable goods, there is weak evidence of overall increases in government spending. However, at the same time electoral turnout, left-wing representation and political fragmentation increases too, which undermines their identification strategy. Even though these studies more or less point to the same direction: proportional systems tend to lead to provision of broad goods and the overall size of the government is not necessarily larger than under plurality rule. However, (Acemoglu, 2005) discusses why OLS, matching methods and IV estimation cannot produce consistent estimates of the effect of different political institutions on economic variables. According to him most of the cross-country studies fail to tackle the endogeneity problem and the most they achieve is to calculate robust correlation, given the difficulty of the task it is an achievement too. He considers that probably other econometric methods shall be used. In overall the above mentioned studies produce robust correlations, but not estimates of causal effects.

There are some applied micro studies as well, where the authors compare politicians in different tiers of parliamentary elections. Firstly, (Stratmann and Baur, 2002) compare the behaviour of politicians elected in single-

member districts (under plurality rule) to those who obtained their mandate through a compensatory method (under proportional rule) in the German Bundestag. They conclude that legislators elected under plurality rule tend to favour pork barrel politics more and consequently government size increases. A more recent study is about Italy, (Gagliarducci et al., 2011), compares the incentives of politicians' under plurality and proportional electoral system. The authors use Italy's mixed-member proportional system to identify the different effects of the two systems. A part of the House of Representatives were elected directly in constituencies, in the plurality tier, while the remaining seats were allocated through a proportional system, in the proportional tier. Candidates could run in both tiers, but if elected in the plurality system, they had to accept that mandate. In this RDD setting they can compare politicians running in both systems, the group that narrowly won their mandate in the plurality system to those who narrowly lost there, but won in the proportional tier. They find that plurality representatives promote more bills targeting at their constituency and are more present in the House than proportional colleagues.

As we can see (Lizzeri and Persico, 2001), (Persson and Tabellini, 2000) give testable predictions: under proportional system more public goods are provided than under plurality systems, because politicians under plurality systems prefer easily targeted transfers and finally political budget cycles are stronger. However, the cross-country analyses of (Milesi-Ferretti et al., 2002), (Aidt et al., 2006), (Funk and Gathmann, 2013) find similar results in line with the mechanism that proportional system tend increase transfers that reach most of the voters. While (Persson et al., 2007) emphasis another mechanism triggered by proportional and plurality systems, government fragmentation. The government fragmentation will drive up expenditures. In the micro studies they find that targeted bills are more popular among politicians directly elected in constituencies than among politicians elected in the proportional tier. However, all these results are cannot establish fully convincing

estimation strategies based on the critique of (Acemoglu, 2005).

3. The Hungarian institutional setting

3.1. The Hungarian municipal system and local politics

In Hungary there are around 3140-3150, in general very small municipalities. Analysing the period between 1990 and 2012 (Horváth et al., 2014) concluded that the main source of policy problem was the task delegation at different levels of municipalities, thus economies of scales could not be realised. In other words, even tiny villages had to provide services that they could not do efficiently. The tensions between efficiency and system's legal structure was mitigated by some centralization initiatives like establishing notary centres or regional centres. To ease the tension between efficiency and legal obligations, municipality leaders have been lobbying to change the legal status of their municipalities from villages to towns. As the main difference in tasks and responsibilities in the Hungarian municipal system is between villages and towns.

The municipality elections[6] take place every 4 years in Autumn, after the Parliamentary elections. After the first free elections in 1990, the electoral rule was changed in 1994, till 2010 no important changes were introduced. The electorate vote for the municipalities' mayor, for the municipality council and for the county council at the same time. The electoral rules[7] for the mayor is the same in every municipality, irrespective of their size. In the case of the county council there are two constituencies: one covers the municipal-

[6]This part is mainly based on (Körösényi et al., 2003) and on (Berta, 2006).

[7]According to (Farrell, 2011), in describing voting systems in political science, three characteristics play a crucial role: the district magnitude (size of the constituency - how many mandates are allocated in a constituency), the ballot structures (cardinal vs. ordinal) and finally the electoral formula (plurality, majority, proportional and mixed). The effect of district magnitude depends on the electoral formula, in proportional systems increasing the district magnitude increases proportionality, while in plurality systems it decreases proportionality (pp16 (Farrell, 2011)).

ities with 10,000 or less inhabitants and the other covers the municipalities with more than 10,000 inhabitants.

The election for municipality council with 10,000 or less inhabitants are organised through the *bloc-voting* system. Depending on the number of inhabitants there are different number of seats in the council. Each voter has the same number of votes as seats, and she has to vote for her preferred candidates on a list. The candidates with the most votes get the mandates.[8] This voting system has been used in e.g. in parliamentary elections in Jordan, Monaco, Mongolia, Cayman Islands, Kuwait, in some local government constituencies in the UK. But in many countries it was abandoned as it produced highly disproportional results - people tended to base their vote on party affiliation than on the candidates (Farrell, 2011).

In municipalities with more than 10,000 inhabitants a variant of the *mixed member proportional system* is used which have been used e.g. in parliamentary elections in Japan, in Italy for a while, in New-Zealand. 60% of the councils seats are allocated through electoral districts, and the remaining 40% seats are distributed through compensational lists[9]. In practice, the voters cast their vote on a candidate in each district, and all the *fragmentary votes* votes of loosing candidates are reused in the compensational list to allocate the remaining seats.[10] To have a compensational list a party

[8]If there are less candidate than seats, than the election is cancelled and a new election is organised. In case of equality of votes a draw decides the outcome.

[9]The system originates from West-Germany, where the Allied forces imposed it after World War II to avoid extreme proportional results, but getting the advantages of Anglo-American systems too. (Farrell, 2011) The Hungarian municipal election system is the original German parliamentary system.

[10]The d'Hondt method is used to allocate the mandates. (See pp 256 (Körösényi et al., 2003).) Meaning that a matrix is calculated, in each column we find the votes of each council-level parties. The first row includes all the fragmentary votes, the second row the number of the fragmentary votes divided by one and a half, the third row the third of the votes, the fourth row the fifth of the votes and so on. Once the matrix is prepared, then the highest number should have been found, and the party with those vote receives a mandate. Then the second highest number in the matrix should be found, and then that party receives a mandate. The procedure is done till all the mandates are allocated

has to have a candidate in at least 25% of the districts. Under some specific circumstances extra mandates are given to minorities, through minority compensational lists, these mandates increase the total number of mandates[11]. There are always more seats allocated through the districts than through the compensational list. For parties it is a tactical question whether to make coalitions before the elections in districts and whether to make common compensational list or not[12]. The phenomenon is present in this system too, consequently not many independent candidate is running for council seat. An example of the mixed election system is the case of Szigetvár (population in 2002: 11,391), where initially 17 seats were available in 2002, but finally 18 people got a mandate. The Left won 8 district mandates out of 10, the Right won one and finally an independent won a mandate too. Through the compensation lists the Left obtained 2 more mandates (from two lists), while the Right won 3 (from one list), the remaining seats went to two independent associations. A Roma candidate won an extra seat. So the Left had 11 (including the mayor), the Right had 4, two independent associations 1 each, an independent had 1 and finally a Roma candidate had 1 mandate.

The mixed member proportional representation system in its classical form is intended to be proportional (it was introduced in Germany in 1949), however at the same time it intends to crowd out small parties from the political arena and thus provide government stability. In the Hungarian municipal election system[13] the stability element is further strengthened by the

- always the highest number of votes result in a mandate.

[11]The electoral committee automatically prepares a minority compensational list with the candidates who are running in the districts. The same rules apply as in case of normal lists, with one extension. If the votes on the list exceed the one quarter of the votes that resulted in a mandate, then an extra mandate is given to the minority. Thus the local council becomes larger. A candidate can be on only one compensational list.

[12]The political science literature calls linking party lists and candidates to get every votes transferred to mandates *apparentement*. (Farrell, 2011)

[13]Before 1994 there were two rounds, and two votes under the mixed-member proportional system. Furthermore, the mayor was not elected by the council members in municipalities with more than 10,000 inhabitants (Múlt-kor History Magazine, 2010)

fact that 60% of council members come from districts (the uneven number of mandates distributed in districts and party list is not unique: the same phenomenon is present in New Zealand's and Germany's parliamentary elections). In the original German system the two votes were not separated, the vote cast to a candidate was automatically cast to the candidate's party. In Germany they separated the two votes in the fifties to establish a stronger relationship between candidates and their constituency, as voters rather based their votes on the candidate's party than on the candidate's personality[14]. Thus, since the modification the voters could vote to a district candidate and to a party list separately (similar system is applied in Hungarian Parliamentary elections). But in the Hungarian municipal elections the two votes are not separated.

To sum up, even if one side dominates in the districts, her majority is mitigated by the compensation list. These dynamics are present in general, while around 72-80% of the district places are won by a Left or Right candidate, only around 60% of the compensatory mandates are won by them. Moreover, in case of the compensatory mandates the share of the two blocks is closer than in the districts. Still, in 2006 when the Right overwhelmingly won at municipal elections, the difference between the blocks remained important on the compensatory list. However, the system has an incentive to be member of a party or association, because then candidates can enter in the local council in two paths. On average 70-80% of politicians who got their mandate on the compensational list run in a district too. (See Table 7)

In Table 8 we can seen that the mixed system crowds out independent candidates. Not only on average the share of independent candidates drop from around 60% to around 15%, but their vote share and consequently their mandate share significantly decrease too. The independents most probably join a local coalition to be able to win a seat in the council. With respect

[14]For further details: http://aceproject.org/ace-en/topics/es/esy/esy_de

to the Right and to the Left, both sides are present in municipalities under the bloc voting system, however it seems that the Right is better in running candidates that win a mandate than the left. Around 40% of candidates under the mixed voting system are affiliated to a local coalition, and not to the Left or to the Right, still the system gives them incentives to join a coalition.

From a party perspective, the incentive of running in coalitions boils down to the fact that the votes cast on them are not lost. Under the block voting system the votes obtained directly transformed to mandates, meaning that a certain vote share in a municipality would lead to a similar share of mandates in the local council. While under the mixed system the transformation of votes to mandates are not so direct, it depends on the strength of other competing parties, whether coalitions are made before or after the elections etc. However we can see that both Left and Right were better off, under the mixed system they *ceteris paribus* obtained a higher mandate share than their vote share would have justified (see Table 9). For example in 2002, the Left by obtaining 40% of the votes in a municipality would have around 41.6% of the mandates in a local council under the bloc voting system, while with the same share of votes they would have the 49.6% of the mandates under the mixed voting system (given that Right did not obtain there any votes). The same is true in other election years, and in case of the Right as well. Thus, coalitions are not only favoured through the extra possibility of getting a mandate through the compensational list, but by the fact that independent votes are not taken into account in the compensational list.

However, these incentives are present, one of the main critiques of the bloc voting system is the disproportional results that it tends to produce in elections in favour of big parties. So even though there are many important incentives to member a party, the final outcome heavily depends on the size of municipality where the election takes places. Still in the empirical analysis we will see that the crowding out is related to population size than to electoral

formula. Independents in large municipalities tend to disappear from the competition below the 10,000 inhabitant line.

4. Data

In my analysis I use several datasets. The first dataset is produced by the Hungarian Central Statistical Office (CSO-TSTAR dataset) and it contains the municipalities balance sheet items from 2002 until 2011, and many characteristics from 1990 until 2011. I use also Hungarian Central Statistical Office Gazetteer of Hungary to compile a dataset with the legal status of Hungarian municipalities. And finally, I use the municipality election data from the Hungarian National Election Office for the election year 1994, 1998, 2002 and 2006. Though CSO-TSTAR dataset covers a longer period, I limit my main analysis only to the years from 2002 up to 2008. The reason behind of restricting my analysis to these years are twofold. Firstly, many municipal balance sheet items are not available for 2009, secondly important changes were introduced in 2007 and the content of statistical variables are not comparable after 2008. To detect underlying differences in municipalities, not only the difference in population size and the voting regime, but observable characteristics are analysed in the robustness check. E.g. the number of enrolled pupils in primary schools, in high-school, the share of adults in the total population (the descriptive statistics can be found in Table 13 and their description in Table 21).

4.1. The political variables

It is important to compare the political landscape[15] below and above the cutpoint. In the following I compare the main political variables graphically and based on descriptive statistics (for graphical representation of the general political landscape see Figure 1 and for descriptive statistics see Table 10). I control for the councils' gender composition[16], the fact for holding double mandates in the county council or in the Parliament[17] and finally for the education level of council members[18].

The bloc system and the mixed system could influence the political com-

[15]Even though there were many parties, we can identify two blocks. A leftist and a rightist block, to determine the member parties of each block I used coalitions formed in government. There were parties who changed their political orientation or allies, but no party formed government with different allies. Unlike in other former Communist countries, in Hungary the party system was stable between 1990 and 2010. I consider mayors and council majorities aligned to the left if they are members of MSZP (Hungarian Socialist Party) or SZDSZ (Alliance of Free Democrats). For the right I consider Fidesz (Alliance of Young Democrats), FKGP (Independent Smallholders' Party), MDF (Hungarian Democratic Forum).

[16]For determining the gender of candidates and council members I used their given name in the records.

[17]For determining if a politician hold a mandate in the Parliament or in the county council too I applied the following procedure: (1) in case of Parliament: I compared the names in the local council and in the Parliament, if the names were identical I verified at the official website of the Parliament the CVs of the member of Parliaments and based on that I indicated in which municipality the MP was a mayor or member of the local council. (2) in case of county council: there are two ways to get into to the county council, either through the list for municipalities below 10,000 inhabitants or the list for municipalities above 10,000 inhabitants. I compared the names in the local council and in the county council taking into account the number of inhabitants of municipalities e.g. I was looking for identical names among county council members who were elected through the list for municipalities above 10,000 inhabitants and at the same time they were in the municipality council of a municipality above 10,000 inhabitants in the same county. In case of more than one name matches, I checked the party affiliation too, if after that there were more than one name matches I checked the archived websites of the National Election Office (http://www.valasztas.hu/) If I still could not unambiguously identify politicians by the characteristics - I looked for information on the internet. In the 2000s I could find everybody, however in the 1990s I still had some politicians that I could not find.

[18]I used "doctoral title" as a proxy as in Hungary medical doctors, vets and lawyers are allowed to use the doctoral title in their name.

petition by giving incentives to the candidates to form coalitions, *a priori* we could think that this incentive would be stronger under the mixed system because of the possible benefits of *apparentement*. However, we cannot see significant differences at the 10,000 cutpoint in most of the political variables. The number of independent candidates start to crowd out at lower population levels than the election systems change. Consequently, the effective number of parties (inverse Herfindahl-Hirschman Index[19]) decreases with the population size, there are no significant changes in case of Left's share and Right's share neither (see Figure 1g-1h). The same is true with respect to the general political preferences too, voters vote to the same extent to parliamentary parties in parliamentary elections (see Figure 1b-1c). The only difference is in case of incumbency: under the mixed system a larger share of politicians are in their second cycle than under the bloc voting, but this is true at the cutpoint.

4.2. The fiscal variables

Analysing the expenditures and the revenues of local councils show different patterns[20]. However, the limitations of the dataset does not allow to completely shed light on the revenue side of the municipalities. 95% of the total expenditures are covered by the items in the dataset, while with respect to the revenues 80-85% of the total revenues could be traced.

The main expenditure items are current expenditures, capital expenditures and subsidies. In Figure 2 the main expenditure and revenue items in per capita terms are plotted. There is a sudden jump in total expenditures

[19] Inverse HHI $= \frac{1}{\sum_{i=1}^{N} share_i^2}$ where share is the mandate share of different coalitions in the council. I consider 3 type of coalitions: left, right and other. Independents are "coalitions" too, with one council member e.g. 5 member council with 5 independents is a council with 5 parties each of them having 20% of the mandates. In case of Szigetvár the Inverse HHI $= \frac{1}{((11/19)^2+(4/19)^2+(1/19)^2+((3/19)^2))} = 2.46$.

[20] The section is based on Darázs (2008) and on The Act LXXXIX. on addressed and targeted grants for municipalities, 1992

at the cutpoint of the different voting regimes. The difference in the expenditure side is mainly driven by the differences in total current expenditures and by capital formation. The social subsidies in per capita terms do not seem to be different. However, as we will see the only significant difference is in investment activity (capital formation), the other variables are not significantly different. To sum up, the descriptive statistics of fiscal expenditures suggest that the investment activity is different between the municipalities under different voting regimes.

The revenue side of municipalities is heterogeneous. Firstly, not every main revenue item is available in the statistics, the size of some fiscal variables could only be inferred from the other variables. Around 95-96% of the revenue items could be directly or indirectly identified. Above the 10,000 cutpoint around 80% of the total revenues could be directly identified, below it is around 85%. The main source of indirectly identified revenue item is the transfer from the National Health Insurance Fund[21]. Given the limitations in my analysis I will focus on the identifiable elements: local own revenues, assigned taxes, total investment revenues and government transfers. In Figure 3 the significantly different element are the local own revenues and investment revenues, but only in election years. There is a difference in all items, and under the mixed voting system in per capita terms the municipalities spend more, but these differences are not significant.

5. Empirical Strategy

In my empirical exercise I estimate a parametric and a non-parametric model to identify the effects of the voting system on different political and

[21]The calculation of transfers from the NHIF (in Hungarian: Országos Egészségbiztosítási Alap) are complicated and consequently, even if the data was available, it would be beyond my scope to analyse it.

fiscal outcomes[22]. In the estimation my outcome variable is Y_{it}, α is the constant, Mixed_system is a dummy for the voting system (takes the value of 1 if the mixed voting system is applied, so the number of inhabitants is higher than 10,000), $\bar{P} = P - 10000$ is the normalized population where P is the population size of the municipality minus 10,000. Finally μ_t is the year fixed effect and ϵ_{it} is the error term. I estimate Equation (1), where i is the municipality identifier and t is the time period.

$$Y_{it} = \alpha + \rho \, \text{Mixed\_system}_{it} + \sum_{k=1}^{p} \delta_k \bar{P}_{it}^k + \sum_{k=1}^{p} \gamma_k \, \text{Mixed\_system}_{it} \bar{P}_{it}^k + \mu_i + \epsilon_{it} \tag{1}$$

The sample is restricted to municipalities above 5,000 and below 15,000 inhabitants and the equation is estimated in with two bandwidths, h=5000 and h=2000. Meaning that firstly $\bar{P}_{it} \in [-h, +h]$ and h=5000, then h=2000. I also estimate the model with different polynomial controls to check the robustness of results (p=1, p=2 and finally p=3). And finally I treat separately election and non-election years.

As there are not many observation on the two sides of the cutpoint, I have to increase the estimation bandwidth. However, by doing so I increase the risk of comparing municipalities that are fairly different. To overcome the bias caused by the few observations I use a triangular kernel and population variables, interaction terms and different polynomials as controls in the estimation. The optimal bandwidth is between 5000 and 2000 in - depending on the left-hand side variable, so in my specification there is a larger and a smaller bandwidth than the optimal ones - to find the the optimal bandwidth I use a mean squared error selector. To keep tractable the results, I choose

[22]For further details on the methodology applied see (Calonico et al., 2014) and (Calonico et al., 2017).

not to apply a different bandwidth for each dependent variable and having coefficients coming from different samples. The larger the bandwidth, the larger polynomial should be regarded as the most relevant to estimate the effect as it controls for heterogeneity. The smaller the bandwidth, the better we are with the lower polynomial as places are fairly similar and with high polynomials we would overfit the data.

All these models are run on different samples from the period between 2002-2008. The election years are 2002 and 2006. In case of political variables I pool together the observations from 2002 and 2006, year fixed effects are included and the standard errors are clustered at municipality level, the sample is restricted to towns. With respect to fiscal variables I average the transfers from 2003 till 2005, the same is done for the transfers in 2007 and 2008. Then I pool together the observations, these are the observations in the non-election years. For the election years I pool together all the observations too. All monetary variables first rescaled to Hungarian forint of year 2002, then the per capita value is calculated.

In the robustness check I run the same regressions on different observable characteristics to verify if there are other discontinuities at the 10,000 cutpoint. Moreover, I run robustness tests at different cutpoints too, at the 3,000 and at the 5,000 population cutpoint. These are important population thresholds where the legal situation changes.

5.1. The effects on political variables

The estimations results in Table 1 confirm what we could see from the graphical representation. Only in case of incumbency, in case of the 2^{nd} cycle, we can find significant differences. Meaning that under the mixed voting system the share of council members in their second term increases by around 10% compared to the bloc voting system. Also the probability of electing a mayor from the Left decreases in the small sample, but the magnitude of the effect and the significance is very sensitive to the sample and to the model specification. However, the share of independent votes

and mandates, the parliamentary coalitions' vote and mandate share, the effective number of parties/candidates (the inverse HHI) do not change. The last result is surprising as based on the number of seats this should not happen. In municipalities with the population size between 5,000 and 10,000 on average 13 council members are elected, while in municipalities with the population size between 10,000 and 15,000, on average 17 council members are elected. Intuitively, with the increase of council size, the inverse HHI should be increasing. But somehow the variable does not change significantly, implying that there is no difference in political fragmentation in municipality councils. The number of competitors for the seats in the council significantly change at the cutpoint if we consider the large sample, in the smaller simple the evidence is limited. In overall, we can rule out the possibility that the number of competitors significantly change at the 10,000 cutpoint because of the change in the voting system.

To sum up, under the mixed voting system the council members keep their seat for a longer time than those elected under the block voting system, at the cutpoint. These details suggests that, even though individual candidates are competing in districts, most probably the voters choose on the basis of party affiliation of candidates and the same is true in case of bloc voting. Apparently at the 10,000 cutpoint the political outcomes do not radically change because of the electoral system, so having a plurality or a proportional system does not change the political life *per se* at the cutpoint.

5.2. The effects on fiscal outcomes

The voting system has not got important effects on the political life, but on fiscal outcomes we can observe some significant differences in line with the (Lizzeri and Persico, 2001) and (Persson and Tabellini, 2000), though the effects are different in election and non-election years. Based on the results, total expenditures/revenues are higher in mixed voting municipalities (see Table 2-3), but these results are not significant. On the expenditure side in case of capital formation, there is no difference between bloc and mixed voting municipalities in election years, but in non-election years capital formation is significantly higher in mixed voting places (yearly 31,570-51,760 HUF per capita). Apparently in non-election years more spending occurs in investments under the mixed system than under the bloc voting system, in line with the theoretical prediction that under proportional systems more public goods provision occurs than under majority systems.

Table 1: Impact of the difference in voting systems on political variables

Dependent variable	h=5000 Linear	h=5000 Quad.	h=5000 Cubic	h=2000 Linear	h=2000 Quad.	h=2000 Cubic
Turnout parl	4.09	3.99	1.94	1.03	-3.36	-1.88
	(2.47)	(3.22)	(4.25)	(4.03)	(5.58)	(4.64)
Left pvotesh	-0.46	2.30	3.56	1.30	0.45	-5.42
	(3.73)	(4.65)	(6.15)	(4.90)	(5.50)	(4.12)
Right pvotesh	-1.53	-3.42	-4	-1.16	1.93	5.79
	(4.11)	(4.88)	(6.57)	(5.73)	(6.93)	(5.17)
Muncipal political variables						
General political variables						
Turnout	4.66	5.14	1.05	-0.01	-2.23	1.26
	(2.96)	(3.87)	(5.12)	(5.01)	(6.34)	(6.09)
N competitors mayor	0.52	0.39	-0.04	-0.08	-0.28	0.30
	(0.50)	(0.63)	(0.77)	(0.72)	(0.90)	(0.74)
Left mayor	-0.36*	-0.39	-0.38	-0.50*	-0.72**	-1.01**
	(0.21)	(0.27)	(0.32)	(0.30)	(0.32)	(0.39)
Right mayor	0.14	0.10	0.07	0.16	0.53	1.04***
	(0.22)	(0.32)	(0.43)	(0.38)	(0.38)	(0.37)
Competitors council	28.21***	25.79***	18.05*	17.50*	6.62	1.23
	(7.61)	(9.19)	(9.49)	(9.17)	(8.92)	(10.41)
HHI inver	-0.07	-0.06	0.64	1.02	1.20	-0.75
	(0.82)	(0.82)	(0.87)	(0.80)	(1.23)	(1.11)
Left candidates share	-3.25	1.23	3.15	-1.42	1.14	14.49
	(5.99)	(7.29)	(8.26)	(8.11)	(9.44)	(7.20)
Right candidates share	-0.82	-2.99	-7.73	-7.59	-8.07	-3.32
	(4.27)	(5.21)	(6.06)	(5.86)	(9.50)	(10.69)
Inde can share	-22.19***	-18.66**	-14.51	-11.28	-3.42	-4.57
	(7.62)	(8.70)	(9.19)	(8.25)	(13.06)	(11.91)
Parlcoal voteshare	3.73	2.68	-5.20	-10.47	-9.38	10.82
	(8.41)	(10.01)	(10.93)	(10.20)	(12.42)	(8.87)
Left vote sh	3.38	7.97	6.92	1.85	0.54	7.43
	(5.97)	(7.22)	(8.42)	(7.90)	(9.31)	(10.33)
Right vote sh	0.34	-5.29	-12.13	-12.32*	-9.92	3.39
	(6.41)	(7.04)	(8.13)	(7)	(8.60)	(9.74)
Inde vote sh	-18.06***	-14.55*	-9.85	-6.30	-0.83	-8.33
	(6.94)	(8.01)	(8.03)	(7.08)	(10.88)	(10.90)
Parlcoal share m	-1.43	-2.25	-11.65	-17.66*	-13.37	15.81
	(8.34)	(9.68)	(11.13)	(10.40)	(13.16)	(8.88)
Left share m	7.16	11.86	12.11	5.85	5.38	10.30
	(6.81)	(8.13)	(9.35)	(8.63)	(10.50)	(14.16)
Right share m	-8.59	-14.11	-23.76*	-23.51**	-18.75	5.52
	(8.94)	(10.32)	(12.39)	(11.31)	(15.23)	(17.41)
Inde share m	-12.54*	-8.35	-2.07	1.11	1.68	-10.65
	(6.86)	(7.42)	(6.83)	(5.77)	(8.90)	(6.69)
Double mandates						
Council&parl man.shar	0.92	0.70	-1.68	-2.21	-3.24*	-2.57
	(1.05)	(1.29)	(1.46)	(1.36)	(1.76)	(2.55)
Council&county man. share	-1.60	0.42	3.70	4.22	10.26**	17.89***
	(3.13)	(4.20)	(4.73)	(4.56)	(4.91)	(3.51)
Incumbency						
Cycle 2 mandate share	-2.37	5.37	11.51**	11.07**	10.18*	10.11**
	(3.60)	(4.24)	(5.16)	(5.25)	(5.74)	(4.71)
Cycle 3 mandate share	-15.76***	-11.85**	-9.33*	-5.50	-3.23	-12.18
	(5.27)	(5.38)	(5.29)	(5.14)	(6.61)	(7.49)
Cycle 4 mandate share	-1.76	-2.38	-2.11	-1.50	-0.71	-0.25
	(1.28)	(1.87)	(2.47)	(2.48)	(3.56)	(4.52)
Other characteristics						
Males' man. share	0.78	-3.15	-5.11	-3.50	-2.63	-2.58
	(4.05)	(4.48)	(4.94)	(4.41)	(4.69)	(4.23)
Doctoral title's man. share	-2.38	-5.60	-8.25	-7.27	-9.14	-5.48
	(4.77)	(6.15)	(7.52)	(7.18)	(7.82)	(7.96)
Obs	270	270	270	100	100	100

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: h=2000 in 2002: 26 bloc voting and 20 mixed voting municipalities, in 2003-2005: 27 bloc voting and 19 mixed voting municipalities, in 2006 31 bloc voting and 21 mixed voting municipalities, in 2007-2008 31 bloc voting and 23 mixed voting municipalities; h=5000 in 2002: 79 bloc voting and 46 mixed voting municipalities, in 2003-2005: 79 bloc voting and 46 mixed voting municipalities, in 2006 97 bloc voting and 48 mixed voting municipalities, in 2007-2008 97 bloc voting and 48 mixed voting municipalities. Municipality type: town. Linear: P=1, quadratic: P=2 and cubic: P=3.

Table 2: Impact of the difference in voting systems on fiscal expenditures

Dependent variable	Election years						Non-election years					
	h=5000			h=2000			h=5000			h=2000		
	Linear	Quad.	Cubic	Linear	Quad.	Cubic	Linear	Quad.	Cubic	Linear	Quad.	Cubic
Total expenditures	34.77	41.86	66.59	45.16	69.40	100.76**	46.55	52.82	86.50	60.44	61.84	84.31
	(30.87)	(40.63)	(46.66)	(48.74)	(44.28)	(39.98)	(32.36)	(45.27)	(56.55)	(58.31)	(68.91)	(73.97)
1)Total current expenditures	41.37*	33.48	37.73	26.43	48.86	95.46***	36.15	26	29.80	14.88	10.07	41.80
	(24.47)	(32.60)	(39.33)	(40.50)	(37.55)	(27.63)	(24.76)	(33.51)	(44.22)	(44.95)	(55.95)	(49.90)
a)Personal expenses	21.16*	17.58	19.28	12.70	21.65	44.75***	19.32	14.79	16.59	8.81	6.50	22.80
	(12.29)	(16)	(19.16)	(19.94)	(19.07)	(14.12)	(12.49)	(16.53)	(21.51)	(21.90)	(27.81)	(25.57)
b)Socsec exp	7.10*	5.66	6.37	4.28	7.30	14.98***	6.53	4.87	5.50	3.04	2.60	8.15
	(4.08)	(5.33)	(6.36)	(6.62)	(6.32)	(4.71)	(4.09)	(5.41)	(7.03)	(7.16)	(9.01)	(8.13)
c)Real current costs	13.12	10.24	12.09	9.44	19.91	35.72***	10.31	6.34	7.70	3.03	0.97	10.85
	(8.47)	(11.61)	(14.19)	(14.20)	(12.44)	(9.13)	(8.57)	(12.10)	(16.20)	(16.35)	(19.61)	(16.76)
2)Capital formation exp	-4.84	3.53	23.44	13.25	16.17	5.63	5.73	13	38.20**	31.57**	46.68***	51.76***
	(10.68)	(11.06)	(14.80)	(12.33)	(12.67)	(13.69)	(10.51)	(13.88)	(14.89)	(15.30)	(15.07)	(16.23)
a)Local capitalformation exp	-0.92	5.87	14.65	11.59	16.17	7.76	0.82	5.14	22.35**	18.30	30.80***	35.89***
	(7.61)	(7.90)	(10.91)	(9.68)	(10.42)	(11.68)	(7.72)	(10.60)	(11.37)	(11.74)	(11.03)	(11.63)
3)Subsidies exp	0.96	2.25	1.92	2.05	3.34	2.30	0.93	1.25	-2	-1.34	0.13	-4.37
	(3)	(3.47)	(3.97)	(3.77)	(4.41)	(4.66)	(3.50)	(4.21)	(5.36)	(5.05)	(7.81)	(8.95)
a)Socialsup exp	0.13	-0.80	-1.41	-0.15	0.64	-1.91	1.04	1.77	0.95	2.49	6.58	5.46
	(2.23)	(2.56)	(2.64)	(2.56)	(2.80)	(2.64)	(2.47)	(2.83)	(3.27)	(3.13)	(4.82)	(4.42)
b)Financial sup exp	0.27	0.14	0.05	0.10	0.74	0.67	0.29	0.11	0.08	0.09	0.84	1.10*
	(0.27)	(0.33)	(0.46)	(0.43)	(0.51)	(0.49)	(0.27)	(0.31)	(0.48)	(0.44)	(0.53)	(0.62)
Obs	270	270	270	98	98	98	270	270	270	100	100	100

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: h=2000 in 2002: 26 bloc voting and 20 mixed voting municipalities, in 2003-2005: 27 bloc voting and 19 mixed voting municipalities, in 2006 31 bloc voting and 21 mixed voting municipalities, in 2007-2008 31 bloc voting and 23 mixed voting municipalities; h=5000 in 2002: 79 bloc voting and 46 mixed voting municipalities, in 2003-2005: 79 bloc voting and 46 mixed voting municipalities, in 2006 97 bloc voting and 48 mixed voting municipalities, in 2007-2008 97 bloc voting and 48 mixed voting municipalities. Municipality type: town. Linear: P=1, quadratic: P=2 and cubic: P=3.

With respect to revenues we can see in Table 3 the difference in election and non-election years are important too. In non-election years most revenue items in the table are not significantly different in the two types of municipalities. In election years a different pattern is present. Most importantly local own revenues (yearly around +30,000 HUF per capita) and total investment revenues are higher (yearly around +14,000 HUF per capita) in municipalities under the mixed system. Both findings are in line with the theoretical predictions on effects of voting systems. The increase in investment revenues during election years is in line with the increased capital formation spending during non-election years. As many government tenders were ex-post financed, it could happen that municipalities increased their investments during non-election time and they finished the projects in election year. Consequently the process reflected in the data as higher capital formation in non-election years, and higher total investment revenues in election years. In case of government transfers, there is limited proof that larger municipalities receive more investment grants per capita terms than towns under the block voting system.

Table 3: Impact of the difference in voting systems on fiscal revenues

Dependent variable	Election years						Non-election years					
	h=5000			h=2000			h=5000			h=2000		
	Linear	Quad.	Cubic	Linear	Quad.	Cubic	Linear	Quad.	Cubic	Linear	Quad.	Cubic
Total rev pc	29.41	37.49	65.58	43.57	63.27	93.42**	58.99*	69.11	94.57	65.87	66.27	96.02
	(30.36)	(39.93)	(45.22)	(47.38)	(41.21)	(34.97)	(33.54)	(47.04)	(60.19)	(62.40)	(76.25)	(80.37)
1) Local own rev pc	12.09	25.94***	37.16***	30.30***	27.94**	30.24**	6.34	15.03	25.96**	15.09	-3.26	-11.47*
	(7.76)	(9.53)	(11.93)	(11.34)	(13.41)	(14.78)	(7.54)	(10.34)	(13.09)	(11.71)	(13.81)	(16.87)
a)Local tax rev pc	10.41	21.21***	28.70***	23.93***	17.48*	17.96*	5.34	11.86	19.16	11.93	-7.07	-23.45*
	(6.33)	(7.78)	(9.51)	(8.69)	(9.55)	(10.23)	(7.76)	(10.15)	(12.86)	(11.39)	(11.23)	(13.63)
2)Assigned taxes sum	2.96	0.04	-4.90	-4.39	-2.06	0.31	5.68	4.25	-3.60	-2.21	-2.34	-1.91
	(6.12)	(7.71)	(9.29)	(9.06)	(11.18)	(12.83)	(5.62)	(7.17)	(7.12)	(6.56)	(5.90)	(6.05)
a)Assigned PIT sum	3.11	0.31	-4.67	-4.49	-1.55	1.66	5.75	4.27	-3.82	-2.74	-1.69	-0.34
	(6.21)	(7.76)	(9.29)	(9.04)	(11.08)	(12.66)	(5.73)	(7.21)	(7.05)	(6.41)	(5.85)	(6.43)
b)Assigned vehtax sum	-0.10	-0.04	0.02	0.37	-0.24	-0.98	-0.03	0.05	0.29	0.60	-0.61	-1.54
	(0.40)	(0.55)	(0.73)	(0.75)	(1.01)	(1.10)	(0.57)	(0.73)	(0.91)	(0.85)	(0.83)	(0.90)
3)Total inv rev sum	0.02	8.23	20.06***	13.59**	14.16***	12.37***	-0.08	4.29	10.97	8.64	11.28	13.25
	(5.83)	(6.75)	(7.25)	(6.51)	(4.28)	(3.83)	(5.36)	(7.33)	(8.57)	(8.95)	(11.27)	(14.17)
a)Inv rev sum	2.63	3.18	2.20	0.50	2.59	4.96	-0.21	-0.91	-0.50	-0.91	-4.53	-2.72
	(2.89)	(3.31)	(4.58)	(4.03)	(3.76)	(4.33)	(2.57)	(2.90)	(3)	(2.72)	(4.71)	(5.96)
4)Govern transfer rev sum	2.95	0.49	5.84	0.77	2.65	5.86	19.30*	20.07	28.17**	25.63*	31.45*	29.14
	(11.44)	(13.34)	(13.67)	(12.34)	(11.02)	(10.61)	(10.58)	(12.29)	(14.32)	(13.72)	(18.64)	(24.74)
a)Intergovern trans rev sum	9.20	9.04	10.04	9	9.52	11.11	10.40	11.92	12.53	9.84	4.45	-2.14
	(6.55)	(7.69)	(8.12)	(7.69)	(8.65)	(9.32)	(6.84)	(8.25)	(9.57)	(9.05)	(11.25)	(13.71)
b)Investment grant rev sum	-6.70	-7.95	-2.19	-5.55	-3.10	-2.71	3.64	3.03	11.05	10.64	19.94***	24.64***
	(5.26)	(6.01)	(7.25)	(5.96)	(5.01)	(3.76)	(4.69)	(6.60)	(7.74)	(7.37)	(6.44)	(5.50)
Obs	270	270	270	98	98	98	270	270	270	100	100	100

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: h=2000 in 2002: 26 bloc voting and 20 mixed voting municipalities, in 2003-2005: 27 bloc voting and 19 mixed voting municipalities, in 2006 31 bloc voting and 21 mixed voting municipalities, in 2007-2008 31 bloc voting and 23 mixed voting municipalities; h=5000 in 2002: 79 bloc voting and 46 mixed voting municipalities, in 2003-2005: 79 bloc voting and 46 mixed voting municipalities, in 2006 97 bloc voting and 48 mixed voting municipalities, in 2007-2008 97 bloc voting and 48 mixed voting municipalities. Municipality type: town. Linear: P=1, quadratic: P=2 and cubic: P=3.

The municipalities under the block voting and mixed voting system have fairly similar revenue situations in non-election years, but in election years under the block voting system an important tax break is present which is in line with the theory (Persson and Tabellini, 2000). And as (Lizzeri and Persico, 2001) predicts, the politicians under proportional formula prefer the provision of public goods, the level of capital formation per capita is higher.

The estimated effects are large. On average the resources spent on capital formation in non-election years(46,680 HUF/capita) is 21,4% of the average of the total expenditures in a municipality just above the cutpoint (217,840 HUF/capita). And the investment revenues in non-election years (14,160 HUF/capita) is about 10% of the total amount of capital formation expenditures in non-election years (3 years, and in each year 46,680 HUF/capita). So even if the projects are ex-post financed, 90% of the financing is not coming from the central government, but most probably the local council plans the budget in a way to cover the costs. With respect to local own revenues in election years, the size of it (27,940 HUF/capita) is about the 13% of the average of the total expenditures in a municipality just above the cutpoint (214,290 HUF/capita).

5.3. Robustness

As a robustness analysis I check if there are discontinuities in observable characteristics at the 10,000 population cutpoint to decide whether there are some underlying differences between these municipalities that could explain the differences in the expenditures and in the revenues. Then I analyse if at the 3,000 and 5,000 cutpoint similar discontinuities in political and fiscal variables could be detected. These robustness checks are executed to check if not the variation in the district magnitude or other changes in the legal environment explain the differences in public finances. Finally I run a McCrary test to check for manipulation of the running variable at the cutpoint.

5.3.1. Discontinuities in other observable characteristics

In case of observable characteristics I use the average value over 2003-2005 and of 2007-2008, then I pool together all the observations and run the same specifications as before - for descriptive statistics see Table 13. I check for discontinuities in the population share of enrolled pupils between the age 7 and 14, 14 and 18, the share of adult population, the population share of older than 60 years, unemployment rate, the per capita value of taxbase, GP visits, children GP visits, hospital beds, vehicles, water consumption, sewage water consumption and finally two different crime rates. In Table 4 we can see that in general there are no significantly consistent discontinuities. Most of the significant results are sensitive to sample size or model specification. Moreover, in the smaller sample (h=2000) there are 96 estimated coefficients and 8 are significant at the significance level of 10%, so 8.3% of the estimated coefficients, which is in line with the theory of hypothesis testing. In the larger sample there are systematic differences in the share of adults and in the number of per capita hospital beds, reflecting that pupils are mainly enrolled in school in larger places and that the hospitals are mainly located in larger places. Finally, there were no significant differences in offences in the administrative and law enforcement sectors, and in corruption offences. Meaning that under the proportional and plurality systems there is no difference in prosecuted offences related to corruption, so no evidence of different rent extraction under different voting systems.

Table 4: Discontinuity analysis of control variables with respect to voting systems

Dependent variable	Election years						Non-election years					
	h=5000			h=2000			h=5000			h=2000		
	Linear	Quad.	Cubic	Linear	Quad.	Cubic	Linear	Quad.	Cubic	Linear	Quad.	Cubic
Enrolled7 14	0.68	0.48	0.11	0.79	1.39**	1.69***	0.66	0.40	-0.06	0.46	0.97	0.81
	(0.53)	(0.68)	(0.79)	(0.58)	(0.59)	(0.50)	(0.61)	(0.78)	(0.96)	(0.84)	(1.02)	(1.20)
Enrolled14 18	1.46	2.46	3.61	2.80	2.27	3.10	0.72	1.32	1.98	1.08	-0.99	-2.50
	(1.92)	(2.26)	(2.44)	(2.33)	(2.71)	(3.08)	(1.75)	(2.28)	(2.77)	(2.62)	(3.27)	(4.53)
Adult	1.95**	2.41*	2.58	1.82	0.56	0.76	1.80**	2.41**	2.79*	1.93	0.32	0.26
	(0.95)	(1.33)	(1.69)	(1.59)	(1.94)	(2.24)	(0.90)	(1.20)	(1.51)	(1.34)	(1.47)	(1.53)
Old60	-1.46	-1.40	-0.80	-1.25	-0.88	0.05	-1.62	-2.15	-1.79	-2.08	-1.99	-0.88
	(1.26)	(1.72)	(1.90)	(1.86)	(2.24)	(2.64)	(1.25)	(1.73)	(1.98)	(1.89)	(2.04)	(2.27)
Unemployment	-0.44	-1.19	-1.24	-0.73	-0.54	-1.14	0.57	0.81	0.95	1.42	2.99	3.29
	(0.91)	(1.03)	(1.06)	(1.01)	(1.10)	(1.31)	(1.07)	(1.22)	(1.39)	(1.31)	(1.91)	(1.94)
Taxba	45.30	94.27*	107.22*	70.09	38.86	87.60**	5.50	20.26	26.91	-8.38	-102.72	-84.32
	(41.62)	(48.92)	(56.60)	(51.78)	(48.32)	(38.08)	(43.50)	(54.88)	(69.42)	(66.10)	(91.10)	(79.85)
Gp visits pc	0.20	-0.63	-0.88	-0.71	-0.74	-0.29	0.40	-0.22	-0.31	-0.08	-0.13	-0.36
	(0.51)	(0.60)	(0.64)	(0.58)	(0.63)	(0.67)	(0.49)	(0.60)	(0.71)	(0.68)	(0.80)	(0.95)
Gp visits ch pc	0.26	0.26	0.16	0.19	0.30	0.10	0.08	0.11	0.05	0.02	0.26	0.04
	(0.23)	(0.26)	(0.29)	(0.27)	(0.28)	(0.28)	(0.20)	(0.21)	(0.27)	(0.26)	(0.34)	(0.43)
Hospital beds pc	0.02**	0.02	0.02	0.01	0.01	0	0.02***	0.02**	0.02	0.02	0.01	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Hospital beds m pc	0.02*	0.02	0.02	0.01	0.01	0	0.02**	0.02*	0.02	0.01	0.01	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Vehicules pc	0.01	0.03	0.05*	0.04*	0.02	0.03	-0	0	0.02	0.02	-0.03	-0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)
Water pc	-0	-0	-0	-0	-0.01	-0.01	-0.01*	-0	-0.01	-0.01	-0.01*	-0.01
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0.01)	(0.01)
Sewage water pc	0.02**	0.02	-0.01	-0.01	-0.01	-0	0.02	0.01	-0.01	-0	-0.01	-0
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Notary cent	-0.01	-0.20**	-0.23*	-0.07	0.04	0.06	-0.01	-0.20**	-0.23	-0.07	0.04	0.06
	(0.10)	(0.10)	(0.12)	(0.08)	(0.05)	(0.05)	(0.10)	(0.10)	(0.12)	(0.08)	(0.05)	(0.05)
Offences	-6.76	1.70	1.91	-0.10	2.02	0.35	-4.85	5.02	5.03	5.04	1.32	-4.03
	(5.09)	(5.75)	(5.83)	(5.19)	(6.07)	(5.74)	(4.70)	(5.75)	(6.55)	(6)	(6.49)	(6.33)
Adm.&Law Sector,	-0.32	0.19	0.51	0.30	-0.43	-0.57	-0.20	0.15	0.19	0.08	-0.03	-0.30
Corruption Offences	(0.33)	(0.32)	(0.55)	(0.49)	(0.39)	(0.64)	(0.29)	(0.29)	(0.26)	(0.20)	(0.23)	(0.33)
Obs	270	270	270	98	98	98	270	270	270	100	100	100

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: h=2000 in 2002: 26 bloc voting and 20 mixed voting municipalities, in 2003-2005: 27 bloc voting and 19 mixed voting municipalities, in 2006 31 bloc voting and 21 mixed voting municipalities, in 2007-2008 31 bloc voting and 23 mixed voting municipalities; h=5000 in 2002: 79 bloc voting and 46 mixed voting municipalities, in 2003-2005: 79 bloc voting and 46 mixed voting municipalities, in 2006 97 bloc voting and 48 mixed voting municipalities, in 2007-2008 97 bloc voting and 48 mixed voting municipalities. Municipality type: town. Linear: P=1, quadratic: P=2 and cubic: P=3.

5.3.2. Robustness tests at other cutpoints

One can argue that all the discontinuities in fiscal outcomes are due to other differences in institutional design, like the council members' salary differences or the size of the municipal council, in other words difference in district magnitude. Both of them are regulated by law and both change at the 10,000 cutpoint. Based on the official salary scale, mayors and council members in a municipality of 11,000 inhabitants could have a higher salary then in a municipality of 9,000 inhabitants (*vica versa* is not possible). At the same time council size is larger too so reaching an agreement is harder in the council, to rule out these channels I ran the very same regressions where similar or larger salary scale jumps are present, to see if similar effects in fiscal outcomes could be detected as in my main specification. In Table 5 all the legal changes as a function of the population are summed up.

Firstly, at the 3,000 population cutpoint the legal status of the mayor changes from part-time work to full-time work. The part-time work status is more lenient on conflict of interest situations than the full-time work status, plus it implies a significant salary increase as well. At the same time the council size increases on average from 9 to 11 members. To check only the effect of council size I use the 5,000 cutpoint, where the council size increase from 11 to 13 members. The estimated equations are the same, but the bandwidth is h=1,000 in case of the 3,000 cutpoint, and h=2,000 in case of the 5,000 cutpoint. This allows that on the two sides of the cutpoint there are no further differences e.g. if at the 3,000 cutpoint a 2,000 bandwidth were used than municipalities with 7 member councils would have been included not only 9 and 11 member councils. Before I analysed towns, here I analyse villages as with such population size there are not many towns in the sample. See for political results Table 15, for fiscal outcomes Table 16 and 17, for controls Table 18. The main conclusion with respect to politics, the Right is less present in villages above the 3,000 cutpoint then below. At the 5,000 cutpoint there are no highly significant political changes. And in case of

fiscal variables and control variables there are no significant differences at the cutpoints. Finally, the number of competitors for council seats are not significantly different even though the district magnitude changes both at the 3,000 and 5,000 cutpoint. Furthermore, there is no difference in crime rates or expenditures/revenues neither, implying that district magnitude do not cause in itself any differences in rent-extractions, in the size or in the composition of municipal expenditures.

Table 5: Summary table of legal changes in function of population size

<table>
<tr><th rowspan="2">Population</th><th rowspan="2">Council size district magnitude</th><th rowspan="2">Voting system</th><th colspan="3">Remuneration multipliers[1]</th><th rowspan="2">District notary[2]</th><th rowspan="2">Financial committee[3]</th></tr>
<tr><th>Part-time mayor</th><th>Full-time mayor</th><th>Council member</th></tr>
<tr><td><1000</td><td>3-5-7</td><td rowspan="5">Bloc (plurality)</td><td>2.5-4.5</td><td>7.0-9.0</td><td>1</td><td>Compulsory</td><td rowspan="2">Voluntary</td></tr>
<tr><td>1000-1300</td><td>7</td><td rowspan="3">4.5-6.5</td><td rowspan="3">8.5-11.0</td><td rowspan="3">1.3</td><td rowspan="4">Voluntary</td></tr>
<tr><td>1300-2000</td><td rowspan="2">9</td></tr>
<tr><td>2000-3000</td><td rowspan="3">Compulsory</td></tr>
<tr><td>3000-5000</td><td>11</td><td colspan="3" rowspan="2">11-12.5</td><td rowspan="2">1.8</td></tr>
<tr><td>5000-10000</td><td>13</td></tr>
<tr><td>10000-20000</td><td>17</td><td>MMP (proportional)</td><td colspan="3">12.5-13.5</td><td></td></tr>
</table>

[1] A basic income is multiplied by these multipliers. [2] In case of small municipalities it is compulsory to have a district level notary office instead of municipal level. [3] The council members have to form a financial committee to monitor the finances.
There are different remuneration multipliers and council sizes for municipalities with more than 20,000 inhabitants and with different legal status, all irrelevant to the analysis.

5.3.3. Manipulation of the running variable - McCrary-test

In a regression discontinuity design setting the running variable can be manipulated in some cases, leading to a collapse of the estimation strategy. In the case of the bloc voting system or the mixed-voting system it could happen that the municipalities try to manipulate the population size to get under on or the other voting system. Actually, the number of eligible voters can be manipulated easily and based on anecdotal evidence parties do so to influence the election outcomes, but to manipulate the population size to change the voting regime has not been subject to such manipulation until now, up to my knowledge. To formally decide if there is manipulation a McCrary-test[23] is run on towns in election and non-election years. The p-value of the test is 0.76 and 0.92, (see Table 6) so there is no presence of manipulation at the cutpoint of 10,000 habitants. (See Figure 5.)

To summarize, the robustness check further strengthens the previous results, demonstrating that there are no other discontinuities at the cutpoint, not the council size or the salary scale drives the fiscal outcomes. It is the voting system that influences the spending decisions and the revenue side of the local councils, and finally there is no manipulation of the running variable - municipalities do not try to be under one or on the other side of the cutpoint.

5.4. Possible mechanism and relation to the results in the literature

A priori many possible mechanisms could be found to provide explanations to the evolution of local public finances. One of the first could be political alignment: municipalities with leadership close to the central government could have access to more resources and thus they can spend differently than those without such connections. Though such a mechanism could play a role, at the 10,000 cutpoint there is no sign of changes to leaders closely related

[23]Under the H_0 there is continuity in the probability density function at the cutpoint, in other words there is no manipulation. Consequently, under H_1 there is manipulation.

to the central government.

Another possible mechanism behind the political and fiscal outcomes could be asymmetric information present in different electoral system. As (Coate and Morris, 1995) describes: voter's limited information leads to higher expenditures. In their model voters have limited information on public projects and on politicians, thus bad politicians prefer to apply *disguised transfer mechanism* to their voting groups, driving up spending. Even though under both voting regimes the voter's information on public projects is similar, but under one of the systems less information could available on average council members type. Again, the results contradict these predictions as there are no significant changes in the political variables at the 10,000 cut-point. At the same time no sign of competition effects is present, refuting the theories of (Ferejohn, 1986), (Persson et al., 2000) and (Milesi-Ferretti et al., 2002) that higher district magnitude would trigger higher competition and thus leading to different municipal revenue and expenditure structures in function of competition intensity.

Finally, the mechanism that could explain the composition of public finances is described by (Lizzeri and Persico, 2001): the differences between proportional and plurality systems. Under the (mixed-member) proportional system more public goods are provided than under plurality systems, and under the plurality systems targeted transfers, such as tax breaks, used more than under proportional systems. The politicians under plurality systems prefer easily targeted transfers, while under proportional systems the politicians want to appeal to a greater public as the margin of winning matters to them not only the fact of winning or loosing. Moreover, the differences in local own revenues are a sign of stronger budget cycles under plurality systems (Persson and Tabellini, 2000).

Compared to the cross-country studies (Milesi-Ferretti et al., 2002) and (Persson et al., 2007) my findings are different. Firstly, in case of municipalities we cannot consider the case of geographical targeting, plus my analysis

show that electoral systems directly affect public finances, not only indirectly. Public finances are already different because of the voting systems, not because of the political effects of voting systems. In this paper the local councils are not significantly different in political terms, they are not more fragmented under bloc or mixed-member voting systems, but the composition of expenditures and of revenues are different. And finally my results are also different from micro studies too, as here we can see clearly the effects of the voting systems as whole, not the different incentives of individual politicians in an assembly.

6. Conclusion

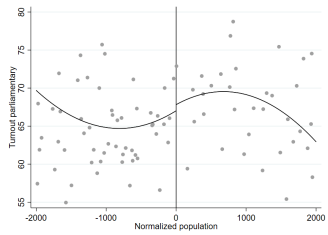
In this paper I compare plurality vs. proportional electoral systems. Specifically, the two voting systems used in Hungarian municipal elections: the *block voting* and the *mixed-member proportional representation*. The first one is a version of a plurality system while the second one is a proportional system. In smaller municipalities a bloc voting system, while in larger municipalities a mixed-member voting system is used. The cutpoint for applying the different voting regimes is 10,000 inhabitants. The setting allows to compare the two voting systems by applying a RDD, and based on the results the proportional system leads to higher investment, while under the plurality system taxing is lower in election years.

Even though the municipalities are similar in observable characteristics, thus one could think that the implemented policies would be similar, but because of the voting system, different policies got enacted. The underlying mechanism could be the one described by (Lizzeri and Persico, 2001), politicians under proportional electoral systems try to provision more public goods to maximise the number of voters supporting them. While under plurality system the electoral cycle is stronger (Persson and Tabellini, 2000). At the same time the results demonstrate that the electoral formula has the crucial role in determining the composition of public expenditures and not the dis-

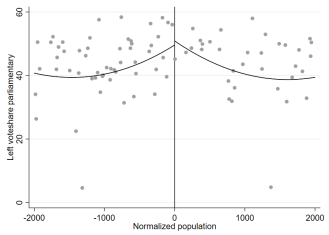
trict magnitude. Opposed to the predictions of theoretical models such as (Ferejohn, 1986), (Persson et al., 2000) and (Milesi-Ferretti et al., 2002).

From a public policy point of view the results suggest that applying different voting regimes leads to distortions in providing public services. One would expect that observing different public finances in homogeneous municipalities would slowly introduce differences in municipalities. But as the observable characteristics have not changed, the investment projects undertaken in proportional systems most probably were not desirable. However, to analyse the efficiency of these projects needs further investigation.

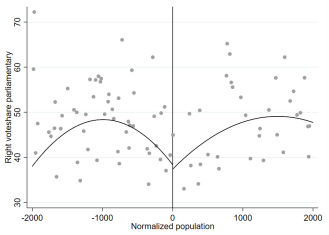
Appendix A Tables and figures



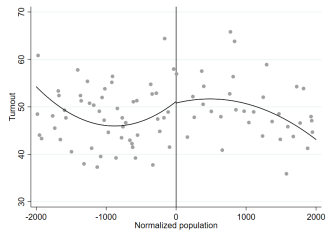
(a) Turnout parl.



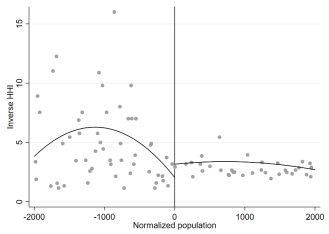
(b) Left parl. vote share



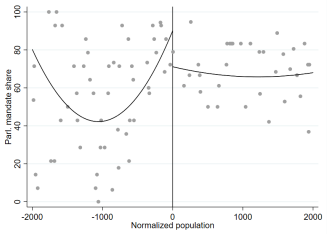
(c) Right parl. vote share



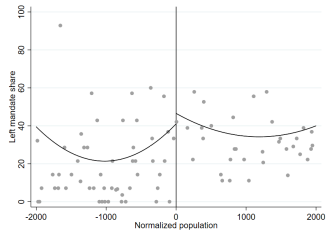
(d) Turnout municipal



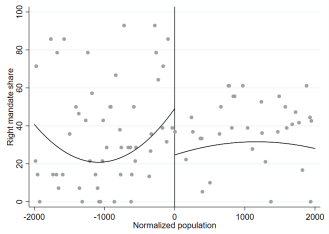
(e) Inverse HHI



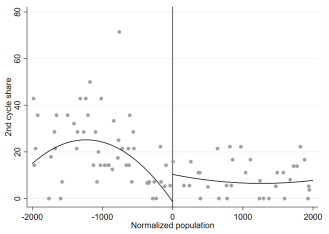
(f) Parl. parties mand. share



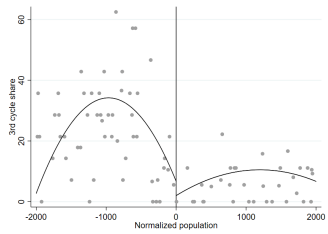
(g) Left mand. share



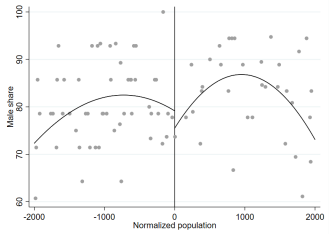
(h) Right mand. share



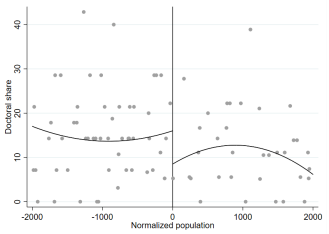
(i) Cycle 2nd share



(j) Cycle 3rd share



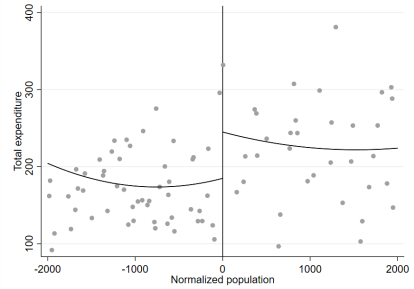
(k) Male share



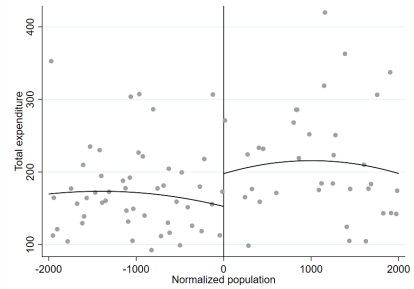
(l) Doctoral share

Figure 1: Graphical analysis of discontinuities in political variables

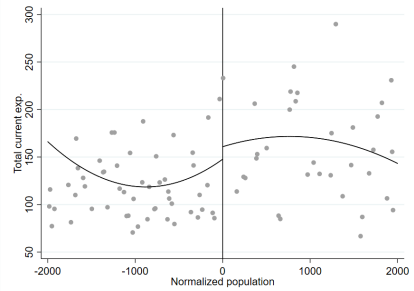
Notes: Second order polynomials are estimated seperately in each side, standard errors clustered at municipality level. Constant and year fixed effects are included . Municipality type: town.



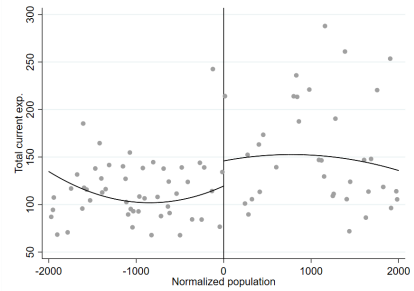
(a) Total exp. - non-election



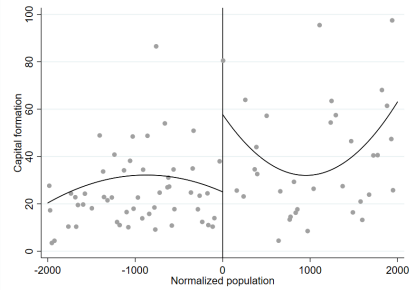
(b) Total exp. - election



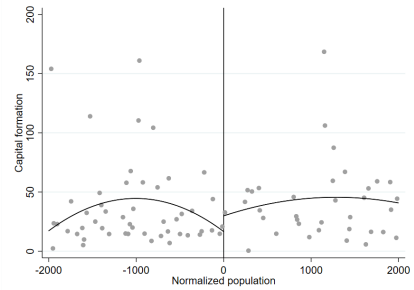
(c) Total current exp. - non-election



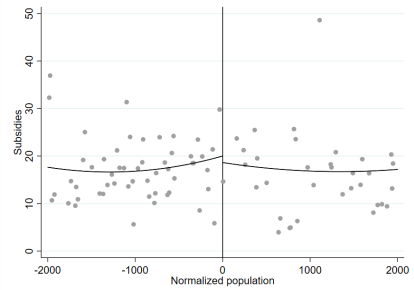
(d) Total current exp. - election



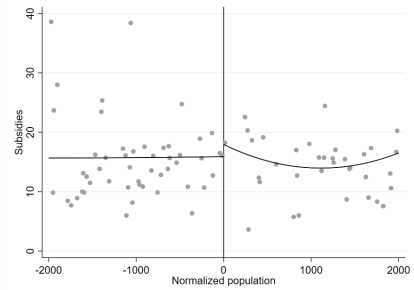
(e) Capital formation - non-election



(f) Capital formation - election



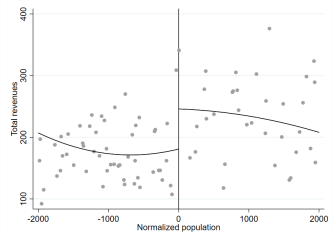
(g) Subsidies - non-election



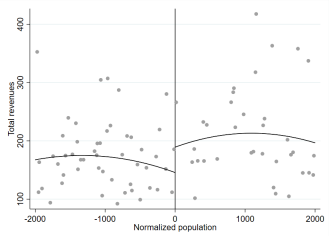
(h) Subsidies - election

Figure 2: Graphical analysis of discontinuities in fiscal variables - expenditure size

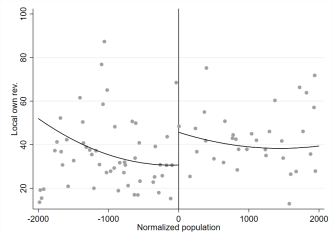
Notes: Second order polynomials are estimated seperately in each side, standard errors clustered at municipality level. Constant and year fixed effects are included . Municipality type: town.



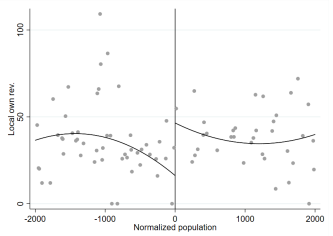
(a) Total rev. - non-election



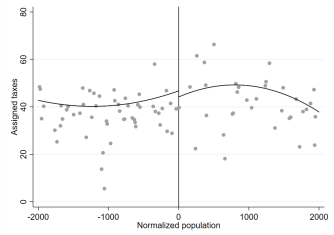
(b) Total rev. - election



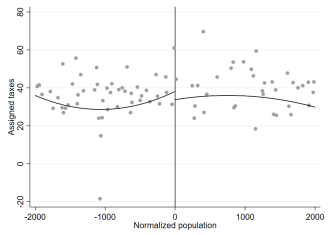
(c) Local own rev. - non-election



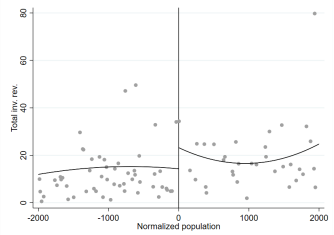
(d) Local own rev. - election



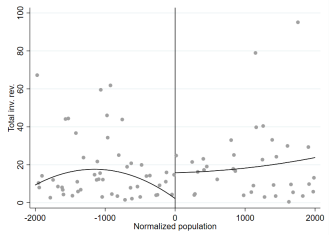
(e) Assigned taxes - non-election



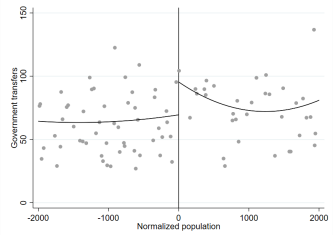
(f) Assigned taxes - election



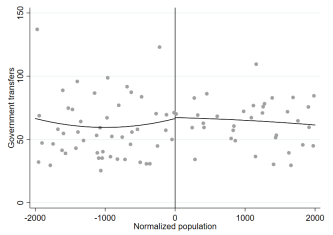
(g) Total inv. rev. - non-election



(h) Total inv. rev. - election



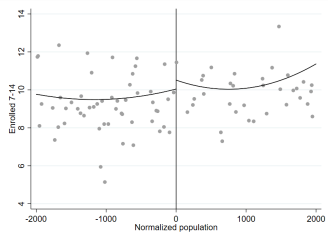
(i) Gov. transfer - non-election



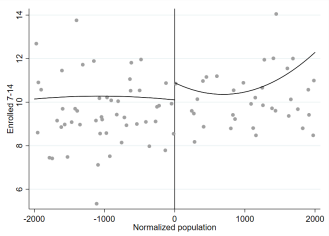
(j) Gov. transfer - election

Figure 3: Graphical analysis of discontinuities in fiscal variables - revenue side

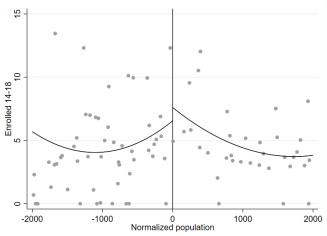
Notes: Second order polynomials are estimated seperately in each side, standard errors clustered at municipality level. Constant and year fixed effects are included . Municipality type: town.



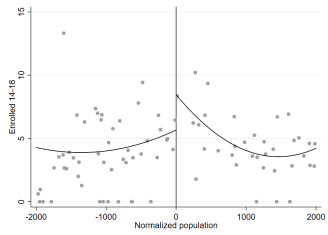
(a) Enrolled 7-14 - non-elect



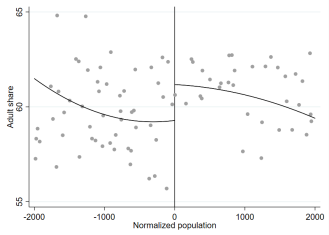
(b) Enrolled 7-14 - elect



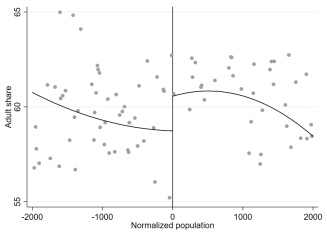
(c) Enrolled 14-18 - non-elect



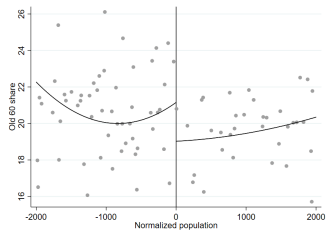
(d) Enrolled 14-18 - elect



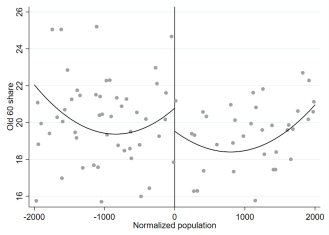
(e) Adult - non-elect



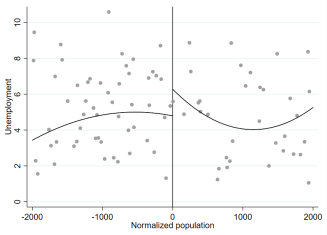
(f) Adult - elect



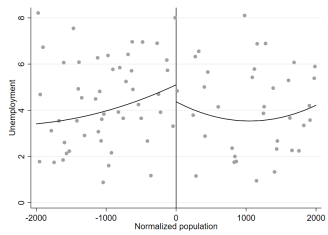
(g) Old 60 - non-elect



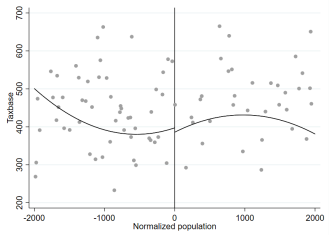
(h) Old 60 - elect



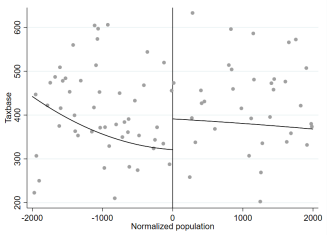
(i) Unemployment - non-elect



(j) Unemployment - elect



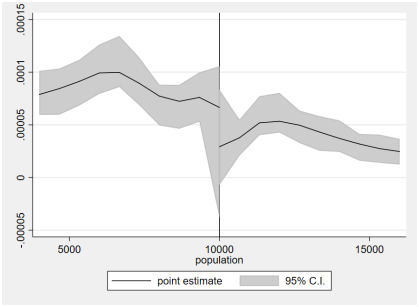
(k) Taxbase - non-elect



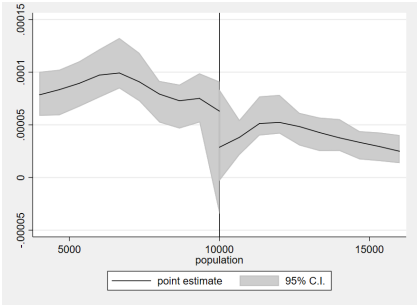
(l) Taxbase - elect

Figure 4: Graphical analysis of discontinuities in control variables

Notes: Second order polynomials are estimated seperately in each side, standard errors clustered at municipality level. Constant and year fixed effects are included . Municipality type: town.



(a) McCrary-test - non-elect



(b) McCrary-test - elect

Figure 5: McCrary-test

Table 6: McCrary-test - manipulation of the running variable

RD Manipulation Test using local polynomial density estimation.				
Cutoff c = 10000.000	election		non-election	
	Left of c	Right of c	Left of c	Right of c
Number of obs	267	149	268	148
Eff. Number of obs	58	40	59	41
Order loc. poly. (p)	2	2	2	2
Order BC (q)	3	3	3	3
Bandwidths (hl,hr)	manual	manual	manual	manual
Bandwidth values	2000.000	2000.000	2000.000	2000.000
Running variable: population.				
Method	T	$P > \|T\|$	T	$P > \|T\|$
Robust Bias-Corrected	0.3092	0.7572	0.1045	0.9168

Model = unrestricted, BW method = comb, Kernel = triangular, VCE method = jackknife

Table 7: Descriptive statistics of the council mandates in case of mixed voting, below the 15,000 population line

	2002			2006		
	mean	std	n	mean	std	n
Independent share						
- district	6.78	6.8	46	4.78	5.8	48
Right share						
- district	30.00	26.8	46	60.42	31.1	48
- comp	28.30	16.0	46	22.02	18.9	48
- total	29.29	14.6	46	44.85	13.0	48
Left share						
- district	42.39	29.0	46	20.63	24.6	48
- comp	31.16	18.1	46	38.99	19.9	48
- total	37.30	13.3	46	28.19	12.7	48
Double candidacy						
Compens & ind[1]	69.79	16.4	46	79.46	18.8	48
Observations	46			48		

Note: Total share includes the mayor and minority compensation candidates as well, while district share and compensation share do not.
[1]The share of council members who won a mandate through the compensational list and run in a district too.

Table 8: Descriptive statistics of the council elections and results, by years and voting regimes, above the 5,000 and below the 15,000 population line

	2002						2006					
	bloc			mixed[1]			bloc			mixed[1]		
	mean	std	n	mean	std	n	mean	std	n	mean	std	n
Independents												
- share among candidates	64.30	20.7	79	18.59	9.2	46	59.95	20.8	97	13.38	7.9	48
- vote share	61.64	23.4	79	14.57	8.4	46	55.08	23.3	97	10.34	7.2	48
- mandate share	58.80	27.1	79	6.78	6.8	46	49.01	28.4	97	4.78	5.8	48
Right												
- share among candidate	12.34	11.6	79	17.13	7.0	46	20.18	13.9	97	23.44	8.2	48
- vote share	14.86	14.2	79	26.15	12.3	46	25.98	18.2	97	39.23	11.4	48
- mandate share	17.74	19.8	79	29.29	14.6	46	35.77	27.9	97	44.85	13.0	48
Left												
- share among candidates	14.52	12.3	79	23.06	8.7	46	13.34	11.1	97	24.19	10.6	48
- vote share	16.01	14.2	79	34.03	11.3	46	12.66	11.0	97	26.79	10.1	48
- mandate share	16.67	18.3	79	37.30	13.3	46	9.67	11.7	97	28.19	12.7	48
Observations	79			46			97			48		

Note: Total share includes the mayor and minority compensation candidates as well, while district share and compensation share do not.

[1] Only district candidates are considered.

Table 9: Regressions to explain vote to mandate transformation in 2002 and in 2006

Dep. variable	Left mandate share		Right mandate share	
	year:2002	year:2006	year:2002	year:2006
	(1)	(2)	(3)	(4)
	β / SE	β / SE	β / SE	β / SE
Right-vote-share	-0.05**	-0.05***	1.16***	1.26***
	(0.02)	(0.01)	(0.04)	(0.02)
Right-vote-inter	-0.12***	-0.05	-0.09*	-0.32***
	(0.04)	(0.04)	(0.05)	(0.06)
Left-vote-share	1.04***	0.93***	0.00	0.10***
	(0.03)	(0.04)	(0.02)	(0.03)
Left-vote-inter	-0.01	0.24***	-0.18***	-0.31***
	(0.05)	(0.06)	(0.06)	(0.06)
Mixed-system	8.40***	0.66	6.00***	14.39***
	(1.83)	(2.05)	(1.93)	(3.35)
Constant	-0.27***	-0.08	-0.22***	-0.52***
	(0.06)	(0.05)	(0.05)	(0.07)
Obs.	3144	3151	3144	3151
R^2	0.9140	0.8779	0.8921	0.9160
F-stat	2128.9910	1407.4428	826.6385	2492.8209

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Descriptive statistics of the political variables

	h=5000						h=2000					
	below			above			below			above		
	mean	std	n	mean	std	n	mean	std	n	mean	std	n
Parliamentary elections												
Turnout(parl.)	63.55	5.7	178	66.93	6.0	92	64.57	5.1	59	66.81	6.0	41
Left votes share(parl.)	45.59	10.6	178	45.71	11.5	92	43.62	10.3	59	43.89	10.2	41
Right vote share(parl.)	47.58	8.9	178	46.08	9.5	92	48.69	8.2	59	48.59	9.2	41
Muncipal political variables												
General political variables												
Turnout	48.45	7.0	178	48.90	6.1	92	48.13	6.6	59	49.26	6.5	41
Numb. of competitors (mayor)	3.15	1.3	178	3.24	1.2	92	3.20	1.2	59	3.20	1.1	41
Numb. of competitors (council)	38.46	8.4	178	64.66	17.0	92	39.53	7.3	59	63.95	16.0	41
HHI-inverse	6.99	4.4	178	2.83	0.7	92	4.95	3.7	59	2.81	0.6	41
Left mayor	0.22	0.4	178	0.34	0.5	92	0.31	0.5	59	0.29	0.5	41
Right mayor	0.22	0.4	178	0.33	0.5	92	0.32	0.5	59	0.44	0.5	41
Parl. coalitions vote share	35.80	23.2	178	62.52	14.3	92	45.74	25.7	59	62.11	16.0	41
Left vote share	14.58	13.0	178	29.88	11.3	92	19.37	16.1	59	27.72	10.9	41
Right vote share	21.22	17.4	178	32.64	13.6	92	26.36	18.8	59	34.39	14.5	41
Parl. coalitions man. share	41.26	28.9	178	69.30	14.8	92	55.25	30.2	59	69.14	15.4	41
Left mandate share	13.83	16.3	178	32.34	14.9	92	19.07	20.5	59	30.52	13.8	41
Right mandate share	27.43	26.0	178	36.96	16.7	92	36.18	29.6	59	38.62	17.0	41
Double mandates												
Council&parl man.share	0.59	2.0	178	1.19	2.3	92	0.93	2.4	59	1.08	2.2	41
Council&county man. share	4.64	5.4	178	5.10	4.7	92	5.09	6.1	59	4.68	5.1	41
Incumbency												
Cycle 2 mandate share	22.13	12.8	178	8.73	6.5	92	21.62	14.9	59	8.80	7.4	41
Cycle 3 mandate share	27.25	14.5	178	5.46	5.7	92	24.19	15.4	59	6.45	7.1	41
Cycle 4 mandate share	2.21	4.3	178	0.72	2.2	92	1.82	3.9	59	0.95	2.5	41
Other characteristics												
Maleshare	79.26	11.5	178	82.44	9.9	92	80.36	8.9	59	82.78	9.1	41
Doctoralshare	14.73	9.6	178	11.30	8.3	92	15.16	9.9	59	11.68	8.8	41
Observations	178			92			59			41		

Table 11: Descriptive statistics of the fiscal variables, in election and non-election years - with h=5000

	election						non-election					
	below			above			below			above		
	mean	std	n	mean	std	n	mean	std	n	mean	std	n
Total expenditures	179.75	62.0	177	215.00	89.4	93	173.90	53.2	178	210.29	75.5	92
1)Total current expenditures	116.17	32.7	177	144.39	57.3	93	118.68	32.2	178	145.56	57.6	92
a)Personal expenses	58.94	16.3	177	72.85	28.8	93	61.19	16.5	178	74.35	29.0	92
b)Socsec exp	19.59	5.1	177	24.25	9.4	93	19.81	5.4	178	24.18	9.6	92
c)Real current costs	37.64	14.3	177	47.28	20.9	93	37.68	12.8	178	47.02	20.7	92
2)Capital formation exp	39.22	40.0	177	51.43	53.4	93	27.86	26.0	178	37.17	24.9	92
a)Local capital form.	25.91	30.9	177	33.44	37.0	93	17.81	20.0	178	24.22	18.9	92
3)Subsidies exp	17.04	9.1	177	15.16	6.8	93	18.64	9.9	178	16.94	8.6	92
s *a)Socialsup exp*	11.87	6.5	177	9.95	5.6	93	12.90	7.4	178	10.91	6.5	92
b)Financial sup exp	0.31	0.4	136	0.48	0.6	87	0.35	0.5	140	0.59	0.6	82
Total rev pc	178.89	63.2	177	213.50	89.8	93	178.75	55.1	178	218.59	76.9	92
1) Local own rev pc	33.41	21.3	177	39.93	21.9	93	35.93	23.3	178	41.92	20.9	92
a)Local tax rev pc	15.87	13.3	177	19.48	15.7	93	18.03	16.6	178	20.86	16.7	92
2)Assigned taxes sum	37.64	9.9	177	38.54	11.5	93	38.03	9.8	178	40.42	11.8	92
hspace0.25cm*a)Assigned PIT sum*	34.78	9.7	177	35.67	11.3	93	34.15	10.4	178	36.38	12.4	92
b)Assigned vehtax sum	2.71	1.8	177	2.76	1.6	93	3.84	1.5	178	4.01	1.2	92
3)Total inv rev sum	19.19	24.6	177	24.88	27.2	93	13.21	13.3	178	18.46	14.0	92
a)Inv rev sum	4.66	6.8	177	7.24	10.0	93	4.00	5.6	177	6.62	9.4	92
4)Govern transfer rev sum	62.41	26.5	177	67.17	33.3	93	64.04	24.6	178	69.00	24.5	92
a)Intergovern trans rev sum	33.46	11.2	177	37.82	12.7	93	38.50	12.7	178	43.26	13.5	92
b)Investment grant rev sum	6.31	17.7	177	9.61	22.3	93	4.48	11.3	178	6.45	9.2	92
Observations	177			93			178			92		

in HUF of 2002.

Table 12: Descriptive statistics of the fiscal variables, in election and non-election years - with h=2000

	election						non-election					
	below			above			below			above		
	mean	std	n	mean	std	n	mean	std	n	mean	std	n
Total expenditures	175.60	60.6	58	214.27	79.6	40	168.86	45.8	59	217.84	73.4	41
a)Personal expenses	58.93	18.3	58	78.67	31.1	40	60.76	18.4	59	79.01	30.1	41
b)Socsec exp	19.56	5.8	58	26.23	10.0	40	19.64	6.0	59	25.77	10.0	41
c)Real current costs	36.82	11.0	58	50.71	21.2	40	37.57	10.9	59	49.69	19.5	41
1)Total current expenditures	115.30	33.7	58	155.62	60.7	40	117.97	33.7	59	154.47	58.0	41
2)Capital formation exp	37.08	38.1	58	39.91	31.1	40	25.13	16.5	59	37.82	24.3	41
a)Local capital form.	25.11	30.6	58	26.73	25.9	40	15.26	12.5	59	23.88	19.3	41
3)Subsidies exp	15.73	7.1	58	14.32	4.9	40	17.01	7.0	59	15.89	8.0	41
a)Socialsup exp	10.87	5.2	58	9.64	4.5	40	11.59	5.8	59	10.43	5.0	41
b)Financial sup exp	0.40	0.4	49	0.62	0.8	37	0.42	0.4	48	0.73	0.9	37
Total rev pc	176.58	61.0	58	213.07	81.2	40	173.35	45.1	59	227.01	72.5	41
1) Local own rev pc	35.56	21.5	58	38.61	17.2	40	35.68	17.6	59	41.83	14.6	41
a)Local tax rev pc 17.36	14.4	58	19.41	12.0	40	18.58	12.9	59	20.18	12.0	41	
2)Assigned taxes sum	36.51	11.8	58	39.47	12.0	40	37.13	9.0	59	40.81	11.3	41
a)Assigned PIT sum	33.44	11.2	58	36.45	11.8	40	32.97	9.3	59	36.66	11.9	41
b)Assigned vehtax sum	2.92	1.7	58	2.88	1.6	40	4.11	1.2	59	4.12	1.1	41
3)Total inv rev sum	16.66	16.0	58	20.33	20.3	40	12.25	10.8	59	17.68	14.0	41
a)Inv rev sum	5.02	7.0	58	6.62	11.0	40	3.92	6.5	58	6.86	11.7	41
4)Govern transfer rev sum	60.22	27.1	58	63.29	19.5	40	60.49	23.3	59	72.04	26.7	41
a)Intergovern trans rev sum	34.67	14.0	58	39.64	12.3	40	39.56	15.9	59	45.20	14.0	41
b)Investment grant rev sum	6.09	14.6	58	5.00	7.9	40	2.94	5.5	59	7.85	10.9	41
Observations	58			40			59			41		

in HUF of 2002.

Table 13: Descriptive statistics of the control variables, in election and non-election years - h=5000

	election						non-election					
	below			above			below			above		
	mean	std	n	mean	std	n	mean	std	n	mean	std	n
Enrolled 7-14f	9.77	1.9	177	10.13	1.6	93	9.38	1.9	178	9.83	1.5	92
Enrolled 14-18	3.22	3.8	177	4.39	2.8	93	3.30	3.9	178	4.43	2.6	92
Adult	59.52	2.1	177	60.59	1.9	93	59.67	2.0	178	60.60	1.8	92
Old60	20.04	2.6	177	18.91	2.1	93	20.49	2.7	178	19.45	2.2	92
Unemployment	5.05	2.4	177	4.12	2.3	93	5.79	2.7	178	4.90	2.6	92
Notary cent	0.10	0.3	177	0.13	0.3	93	0.10	0.3	178	0.13	0.3	92
Taxbase	391.15	101.1	177	448.41	119.4	93	428.52	104.5	178	483.04	119.4	92
Gp visits pc	6.08	1.5	177	5.53	1.1	93	5.71	1.4	178	5.26	1.0	92
Gp visits ch pc	1.50	0.6	177	1.56	0.4	93	1.54	0.6	178	1.56	0.4	92
Hospital beds	0	0.0	177	0.01	0.0	93	0	0.0	178	0.01	0.0	92
Hospital beds m pc	0	0.0	177	0.01	0.0	93	0	0.0	178	0.01	0.0	92
Vehicules pc	0.25	0.1	177	0.27	0.1	93	0.27	0.1	178	0.29	0.1	92
Water pc	0.03	0.0	177	0.03	0.0	93	0.03	0.0	178	0.03	0.0	92
Sewage water pc	0.03	0.0	177	0.03	0.0	93	0.03	0.0	178	0.03	0.0	92
Offences pc	32.29	16.7	177	34.83	12.3	93	31.56	13.9	178	34.42	10.8	92
Adm.&Law Sector, Corruption Offences	0.65	1.6	177	0.51	0.4	93	0.69	2.7	178	0.57	0.5	92
Observations	177			93			178			92		

in HUF of 2002.

Table 14: Descriptive statistics of the control variables, in election and non-election years - h=2000

	election						non-election					
	below			above			below			above		
	mean	std	n	mean	std	n	mean	std	n	mean	std	n
Enrolled 7-14	9.66	1.8	58	10.17	1.3	40	9.19	1.5	59	9.80	1.3	41
Enrolled 14-18	3.89	3.1	58	4.53	3.0	40	4.13	3.4	59	4.43	2.7	41
Adult	59.61	2.3	58	60.56	1.7	40	59.80	2.2	59	60.64	1.6	41
Old60	20.12	2.5	58	19.50	1.7	40	20.60	2.4	59	19.93	1.8	41
Unemployment	4.47	2.1	58	4.11	1.9	40	5.14	2.3	59	4.84	2.2	41
Notary cent	0.03	0.2	58	0.20	0.4	40	0.03	0.2	59	0.20	0.4	41
Taxbase	404.42	98.0	58	430.01	101.4	40	443.14	99.7	59	469.56	94.8	41
Gp visits pc	5.50	1.1	58	5.88	1.1	40	5.22	1.0	59	5.50	1.1	41
Gp visits ch pc	1.50	0.5	58	1.55	0.4	40	1.57	0.5	59	1.49	0.4	41
Hospital beds	0	0.0	58	0.01	0.0	40	0	0.0	59	0.01	0.0	41
Hospital beds m pc	0	0.0	58	0.01	0.0	40	0	0.0	59	0.01	0.0	41
Vehicules pc	0.26	0.1	58	0.27	0.0	40	0.28	0.1	59	0.29	0.0	41
Water pc	0.03	0.0	58	0.03	0.0	40	0.03	0.0	59	0.03	0.0	41
Sewage water pc	0.03	0.0	58	0.04	0.0	40	0.03	0.0	59	0.04	0.0	41
Offences pc	36.08	18.6	58	33.50	13.0	40	32.94	12.3	59	32.95	9.6	41
Corrupt offences pc	0.92	2.5	58	0.51	0.4	40	0.61	0.6	59	0.60	0.5	41
Observations	58			40			59			41		

in HUF of 2002.

Table 15: Impact of the difference in voting systems on political variables, at other cutpoints

Dependent variable	Part-time/full-time (h=1000) Linear	Quadr.	Cubic	cutpoint:5000 (h=2000) Linear	Quadr.	Cubic
General political variables						
Parliamentary elections						
Turnout(parl.)	-1.51	-1.98	-2.59	1.22	-2.78	-7.20*
	(1.63)	(2.05)	(2.42)	(3.31)	(4.18)	(4.19)
Left votes share(parl.)	0.53	0.45	-2.28	-6.77	-5.51	-2.98
	(2.51)	(3.17)	(3.81)	(5.24)	(6.70)	(9.26)
Right vote share(parl.)	1.98	3.67	5.47	-1.71	-4.88	-5.41
	(2.53)	(3.24)	(3.92)	(3.43)	(4.63)	(5.75)
Muncipal political variables						
General political variables						
Turnout	-0.22	-0.14	0.63	4.90*	2.23	0.20
	(2.36)	(3)	(3.48)	(2.89)	(3.90)	(5.01)
Numb. of competitors (mayor)	-0.13	-0.54	-0.85	1.46	1.96	2.39
	(0.34)	(0.43)	(0.53)	(0.97)	(1.34)	(1.76)
Party political variables						
Left mayor	0.13**	0.17**	0.18**	-0.11	-0.11	-0.04
	(0.06)	(0.08)	(0.09)	(0.13)	(0.18)	(0.22)
Right mayor	-0.11*	-0.13	-0.05	0.09	0.06	0.11
	(0.06)	(0.08)	(0.10)	(0.11)	(0.13)	(0.15)
Competitors council	0.63	-0.02	-0.06	4.45	5.80	9.11**
	(1.88)	(2.31)	(2.76)	(2.78)	(3.63)	(4.18)
HHI inverse	1.64**	1.63*	1.32	0.26	-0.56	-1.28
	(0.68)	(0.88)	(0.99)	(1.57)	(2.17)	(2.81)
Left candidates share	-1.23	-1.56	-0.60	2.45	6.36	8.85
	(2.62)	(3.75)	(4.76)	(5.14)	(7.02)	(9.34)
Right candidates share	-4.86**	-5.86**	-6.69**	-0.84	-4.03	-3.60
	(1.96)	(2.33)	(2.58)	(3.36)	(4.28)	(5.99)
Inde can share	5.57	6.61	5.49	-2.53	-5.90	-2.03
	(4.06)	(5.47)	(6.44)	(7.27)	(10.40)	(14.14)
Parl. coalitions vote share	-6.58*	-7.92	-7.42	3.37	3.80	7.78
	(3.63)	(4.98)	(6.06)	(8.30)	(11.29)	(15.17)
Left vote share	-0.86	-0.53	0.57	3.55	7.67	10.23
	(2.76)	(3.94)	(4.93)	(5.41)	(7.36)	(9.61)
Right vote share	-5.73**	-7.38***	-7.99***	-0.18	-3.87	-2.45
	(2.26)	(2.72)	(3.07)	(4.67)	(5.97)	(7.94)
Inde vote share	8	9.66	8.52	-4.92	-8.26	-6.96
	(4.41)	(5.90)	(6.81)	(8.71)	(12.21)	(16.17)
Parl. coalitions man. share	-5.19	-7.22	-6.67	4.39	6.27	14.23
	(4.24)	(5.79)	(7)	(10.60)	(14.11)	(18.24)
Left mandate share	2.09	3.33	3.93	2.05	7.65	12.54
	(3.07)	(4.32)	(5.30)	(6.28)	(8.48)	(10.93)
Right mandate share	-7.28**	-10.56***	-10.61**	2.34	-1.39	1.69
	(3.11)	(3.93)	(4.77)	(7.21)	(9.07)	(11.19)
Inde mandate share	8.33	11.50*	10.77	-5.30	-10.66	-13.05
	(5.34)	(6.89)	(7.73)	(10.68)	(14.65)	(18.94)
Double mandates						
Council&parl man.share	-0.02	-0.19	0.04	-0.45	-0.92	-0.79
	(0.07)	(0.14)	(0.05)	(0.46)	(0.76)	(0.80)
Council&county man. share	0.18	0.05	0.13	-1.16	-1.45	-2.03
	(0.79)	(1)	(1.28)	(1.42)	(1.48)	(2.01)
Incumbency						
Cycle 2 mandate share	0.41	1.78	0.81	-5.55	-6.53	-6.74
	(3)	(4.17)	(5.50)	(5.81)	(8.28)	(11.57)
Cycle 3 mandate share	0.73	0.98	1.05	-11.44*	-16.65**	-19.17*
	(3.51)	(4.44)	(5.50)	(5.93)	(7.97)	(10.04)
Cycle 4 mandate share	0.57	1.19	1.84	-1.96**	-1.96*	-1.15
	(0.84)	(1.13)	(1.38)	(0.99)	(1.16)	(1.42)
Other characteristics						
Males' man. share	-3.12	-5.11	-6.44	0.79	-1.56	2.99
	(3.38)	(4.21)	(5.15)	(5.81)	(8.35)	(11.10)
Doctoral title's man. share	-0.09	-0.06	1.47	5.71	0.76	-7.64
	(2.08)	(2.80)	(3.65)	(5.61)	(5.97)	(5.81)
Obs	806	806	806	436	436	436

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: Number of municipalities below and above the cutpoint in case of part-time/full-time for 2002: 285 below and 119 above, for 2003-05: 290 below and 120 above, for 2006: 287 below and 113 above the cutpoint, for 2007-08: 285 below and 111 above the cutpoint; in case of cutpoint=5000 for 2002: 186 below and 45 above, 2003-05: 186 below and

Table 16: Impact of the difference in voting systems on fiscal expenditures, at other cutpoints

Dependent	Election years						Non-election years					
	Part-time/full-time h=1000			cutpoint:5000 h=2000			Part-time/full-time h=1000			cutpoint:5000 h=2000		
	Linear	Qaudr.	Cubic	Linear	Qaudr.	Cubic	Linear	Qaudr.	Cubic	Linear	Qaudr.	Cubic
Total expenditures	-25.20	-6.54	11.15	-78.54	-99.01	-114.89	-18.01	-10.57	-7.11	-12.22	-19.57	-24.20
	(17.04)	(21.31)	(25.23)	(50.91)	(79.43)	(103.72)	(11.64)	(14.27)	(15.09)	(21.65)	(23.48)	(30.91)
1)Total current expenditures	-0.93	-0.63	-2.42	-0.60	0.74	3.45	-4.54	-4.45	-3.31	-10.74	-12.20	-14.76
	(5.83)	(7.60)	(9.03)	(10.18)	(13.07)	(16.13)	(6.11)	(7.53)	(8.60)	(8.74)	(11.23)	(14.46)
a)Personal expenses	0.91	1.83	2.28	2.34	1.62	2.50	-1.87	-1.49	-1.09	-4.69	-4.75	-5.76
	(2.73)	(3.36)	(3.83)	(5.10)	(6.57)	(8.12)	(3.33)	(4.01)	(4.49)	(4.78)	(6.16)	(7.67)
b)Socsec exp	0.24	0.31	0.38	1.02	0.92	1.14	-0.50	-0.51	-0.41	-1.30	-1.11	-1.43
	(0.92)	(1.12)	(1.27)	(1.67)	(2.11)	(2.57)	(1.08)	(1.29)	(1.43)	(1.55)	(2)	(2.48)
c)Real current costs	-2.08	-2.77	-5.08	-3.96	-1.79	-0.19	-2.18	-2.45	-1.81	-4.75	-6.34	-7.57
	(3.19)	(4.49)	(5.76)	(4.13)	(5.31)	(6.59)	(2.07)	(2.73)	(3.37)	(3.32)	(4.26)	(5.52)
2)Capital formation exp	-14.63	-1.76	3.34	-62.53	-83.03	-99.24	-9.79	-5.39	-5.98	6.15	-2.22	-5.67
	(10.98)	(15.93)	(14.88)	(37.82)	(60.04)	(78.91)	(7.01)	(9.23)	(10.02)	(15.18)	(13.03)	(11.46)
a)Local capitalformation exp	-13.31	-6.71	-3.45	-47.63	-63.16	-78.67	-2.94	0.35	-0.37	2.51	-1.91	-6.10
	(8.96)	(11.87)	(11.46)	(29.74)	(47.50)	(62.49)	(4.38)	(5.70)	(6.26)	(8.93)	(7.85)	(7.07)
3)Subsidies exp	-4.89	-4.50	-1.44	-9.92	-13.96	-18.30	-1.34	0.58	1.23	0.23	6.66	13.48
	(4.26)	(4.87)	(4.29)	(13.36)	(20.96)	(27.36)	(2.96)	(3.47)	(3.69)	(6.29)	(8.91)	(11.80)
a)Socialsup exp	-3.43	-3.07	-0.65	-14.59	-20.81	-25.89	-0.78	0.21	1.60	-3.38	0.98	7.34
	(3.84)	(4.41)	(3.85)	(12.42)	(19.93)	(26.19)	(2.72)	(3.19)	(3.46)	(4.59)	(6.68)	(8.81)
b)Financial sup exp	-0.05	-0.09	-0.13	0.29	0.28	0.06	0	-0.03	-0.01	0.03	-0	-0.17
	(0.12)	(0.13)	(0.14)	(0.35)	(0.46)	(0.58)	(0.13)	(0.13)	(0.11)	(0.13)	(0.19)	(0.30)
Obs	804	804	804	437	437	437	806	806	806	436	436	436

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: Number of municipalities below and above the cutpoint in case of part-time/full-time for 2002: 285 below and 119 above, for 2003-05: 290 below and 120 above, for 2006: 287 below and 113 above the cutpoint, for 2007-08: 285 below and 111 above the cutpoint; in case of cutpoint=5000 for 2002: 186 below and 45 above, 2003-05: 186 below and 44 above, for 2006: 168 below and 38 above, for 2007-08: 170 below and 36 above. Municipality type: village. Linear: P=1, quadratic: P=2 and cubic: P=3.

Table 17: Impact of the difference in voting systems on fiscal revenues, at other cutpoints

Dependent	Election years						Non-election years					
	Part-time/full-time h=1000			cutpoint:5000 h=2000			Part-time/full-time h=1000			cutpoint:5000 h=2000		
	Linear	Quadr.	Cubic	Linear	Quadr.	Cubic	Linear	Quadr.	Cubic	Linear	Quadr.	Cubic
Total rev pc	-24.67	-4.93	11.92	-75.88	-98.36	-116.39	-20.06*	-13.29	-7.88	-13.52	-22.49	-28.68
	(16.74)	(20.94)	(24.85)	(51.22)	(80.52)	(105.47)	(11.87)	(14.35)	(15.19)	(22.21)	(24.37)	(31.91)
1) Local own rev pc	-10.21	-3.41	9.04	-10.23	-24.72	-33.18	-4.78	-4.66	-5.09	-3.97	-22.52	-43.28
	(8.47)	(6.13)	(10.94)	(12.28)	(17.64)	(23.29)	(4.99)	(5.20)	(5.16)	(11.55)	(15.12)	(21.69)
a)Local tax rev pc	1.95	1.77	3.30	1.12	-6.12	-10.32	-0.75	-0	-0.38	-3.24	-18.96	-38.42*
	(3.42)	(3.32)	(3.62)	(7.47)	(10.36)	(14.69)	(3.96)	(3.89)	(3.83)	(9.87)	(13.43)	(20.87)
2)Assigned taxes sum	1.48	1.05	1.55	-4.10	-3.50	-3.18	0.56	-0.17	0.21	-4.50	0.16	7.62
	(1.98)	(2.35)	(2.71)	(3.67)	(4.94)	(6.27)	(2.14)	(2.50)	(2.89)	(3.97)	(5.48)	(7.15)
a)Assigned PIT sum	1.89	1.56	2	-4.59	-4.10	-4.20	0.80	-0.27	0	-4.90	0.25	7.87
	(2.10)	(2.48)	(2.85)	(4.04)	(5.30)	(6.53)	(2.36)	(2.74)	(3.15)	(4.71)	(6.36)	(8.02)
b)Assigned vehtax sum	-0.35	-0.31	-0.25	0.34	0.41	0.91	-0.23	0.16	0.30	0.46	-0.08	-0.29
	(0.28)	(0.39)	(0.50)	(0.66)	(0.75)	(0.70)	(0.38)	(0.46)	(0.55)	(0.98)	(1.23)	(1.31)
3)Total inv rev sum	-8.95	0.71	3.22	-41.82	-56.06	-68.91	-6.95	-2.40	-0.88	-1.48	-8.47	-3.80
	(6.83)	(10.80)	(8.13)	(34.48)	(55.80)	(73.30)	(5.21)	(7.34)	(8.16)	(11.84)	(10.67)	(10.06)
a)Inv rev sum	-1.45	0.87	-0.38	-10.87	-11.75	-15.33	-3.50	-2.84	-2.42	-2.74	-3.62	-0.13
	(2.36)	(4.07)	(3.37)	(9.77)	(15.64)	(20.51)	(2.44)	(3.28)	(3.73)	(4.68)	(4.60)	(4.42)
Go*4)Govern transfer rev sum*	-2.10	1.39	4.91	-6.27	-0.36	2.36	-5.20	-2.88	-2.80	1.11	13.07	19.54
	(6.59)	(8.37)	(9.70)	(9.34)	(10.94)	(12.88)	(6.11)	(7.38)	(8.49)	(9.15)	(11.69)	(15.36)
a)Intergovern trans rev sum	-1.66	-0.45	-0.07	0.88	2.07	3.04	-4.39	-3.37	-2.41	-1.30	2.66	6.84
	(2.44)	(3.12)	(3.73)	(2.93)	(3.60)	(4.31)	(3.23)	(3.99)	(4.72)	(4.13)	(5.31)	(7.12)
b)Investment grant rev sum	-1.08	0.28	1.11	-8.03	-6.97	-6.75	0.56	0.96	-1.14	0.46	1.80	0.20
	(3.68)	(4.56)	(5.06)	(5.15)	(6.02)	(7.66)	(2.16)	(2.39)	(2.33)	(3.58)	(2.96)	(2.57)
Obs	804	804	804	437	437	437	806	806	806	436	436	436

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: Number of municipalities below and above the cutpoint in case of part-time/full-time for 2002: 285 below and 119 above, for 2003-05: 290 below and 120 above, for 2006: 287 below and 113 above the cutpoint, for 2007-08: 285 below and 111 above the cutpoint; in case of cutpoint=5000 for 2002: 186 below and 45 above, 2003-05: 186 below and 44 above, for 2006: 168 below and 38 above, for 2007-08: 170 below and 36 above. Municipality type: village. Linear: P=1, quadratic: P=2 and cubic: P=3.

Table 18: Discontinuity analysis of control variables with respect to voting systems, at other cutpoints

Dependent	Election years						Non-election years					
	Part-time/full-time h=1000			cutpoint:5000 h=2000			Part-time/full-time h=1000			cutpoint:5000 h=2000		
	Linear	Quadr.	Cubic	Linear	Quadr.	Cubic	Linear	Quadr.	Cubic	Linear	Quadr.	Cubic
Enrolled7 14	-0.87	-0.62	-0.36	0.71	1.17	1.60	-0.71	-0.58	-0.51	0.41	2.08**	3.37**
	(0.67)	(0.82)	(0.96)	(0.77)	(0.93)	(1.10)	(0.65)	(0.74)	(0.83)	(0.83)	(1.04)	(1.09)
Enrolled14 18	-0.32	-0.17	-0.01	0.25	0.16	0.32	-0.29	-0.11	0	0.55	0.67	0.13
	(0.19)	(0.19)	(0.10)	(0.58)	(0.77)	(0.97)	(0.17)	(0.15)	(0.10)	(0.64)	(0.80)	(0.83)
Adult	0.54	0.57	0.78	-0.33	0.35	0.73	-0.66	-1.11	-1.17	-0.05	0.01	-0.34
	(1.27)	(1.77)	(2.16)	(0.85)	(1.07)	(1.32)	(0.73)	(0.92)	(1.12)	(0.82)	(1.08)	(1.27)
Old60	1.38	1.61	1.61	0.67	-0.31	0	1.77**	2.51**	2.97**	-0.54	-2.57	-3.26
	(0.96)	(1.26)	(1.49)	(1.20)	(1.55)	(1.89)	(0.88)	(1.10)	(1.26)	(1.22)	(1.53)	(1.70)
Unemployment	-0.27	0.01	0.63	-0.41	-0.31	-0.26	-0.33	-0.13	0.17	-0.75	0.67	2.95
	(0.85)	(1.06)	(1.17)	(1.30)	(1.75)	(2.09)	(0.90)	(1.07)	(1.19)	(1.66)	(2.44)	(3.29)
Taxba	-6.25	-26.07	-43.64	37.84	46.84	21.01	-7.20	-37.76	-67.96	50.60	-12.27	-112.88
	(35.34)	(43.46)	(49.59)	(52.04)	(67.99)	(85.70)	(33.72)	(40.02)	(48.33)	(65.31)	(89.65)	(97.80)
Gp visits pc	-0.47	-0.74	-0.45	0.37	0.37	1	0.14	0.37	0.51	0.40	0.45	0.72
	(0.73)	(0.98)	(1.15)	(0.69)	(0.82)	(0.96)	(0.60)	(0.78)	(0.96)	(0.59)	(0.71)	(0.81)
Gp visits ch pc	0.25	0.22	-0.06	-0.30	-0.06	-0.10	0.20	0.28	0.10	-0.38	-0.21	-0.30
	(0.32)	(0.42)	(0.52)	(0.35)	(0.46)	(0.56)	(0.29)	(0.36)	(0.43)	(0.38)	(0.52)	(0.66)
Vehicules pc	0	0.01	0.01	-0.01	-0.01	-0	-0	0	0	0.02	0	-0.01
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)	(0.04)
Water pc	0	0	0	-0	-0	-0.01	0	0	0	0	-0.01	-0.01**
	(0)	(0)	(0)	(0)	(0)	(0.01)	(0)	(0)	(0)	(0)	(0)	(0)
Sewage water pc	0.01	-0	-0.01	0.01	0.01	0.01	0	-0	-0.01**	-0	-0.02	-0.04*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0)	(0.01)	(0.01)	(0.01)	(0.02)
Notary cent	-0.04	-0.02	-0.10	0.01	-0.05	-0.10	-0.04	-0.02	-0.10	0.01	-0.05	-0.10
	(0.10)	(0.12)	(0.14)	(0.09)	(0.07)	(0.07)	(0.10)	(0.12)	(0.14)	(0.09)	(0.07)	(0.07)
Offences	5.11	18.40***	14.79***	-5.55	-14.76**	-8.33	-3.79	4.69	3.47	2	1.05	4.21
	(5.14)	(6.72)	(5.26)	(4.36)	(7.24)	(7.09)	(5)	(6.88)	(7.69)	(4.71)	(6.52)	(5.52)
Corrupt Offences	-0.42	0.76	0.30	0.60	-0.45	-0.36	-0.61	0.51	0.36	-0.03	-0.73	-0.06
	(0.52)	(0.84)	(0.46)	(0.52)	(0.98)	(0.50)	(0.45)	(0.57)	(0.29)	(0.27)	(0.53)	(0.32)
Obs	804	804	804	437	437	437	806	806	806	436	436	436

Robust standard errors in parentheses - clustered at municipality level. Constant and year fixed effects are included. Composition of the samples: Number of municipalities below and above the cutpoint in case of part-time/full-time for 2002: 285 below and 119 above, for 2003-05: 290 below and 120 above, for 2006: 287 below and 113 above the cutpoint, for 2007-08: 285 below and 111 above the cutpoint; in case of cutpoint=5000 for 2002: 186 below and 45 above, 2003-05: 186 below and 44 above, for 2006: 168 below and 38 above, for 2007-08: 170 below and 36 above. Municipality type: village. Linear: P=1, quadratic: P=2 and cubic: P=3.

Table 19: The description of political variables

Variable	Description	Unit of measure
Turnout(parl.)	Voter turnout in parliamentary elections.	Percentage point
Left votes share(parl.)	The vote share of left in parliamentary elections.	Percentage point
Right vote share(parl.)	The vote share of right in parliamentary elections.	Percentage point
Turnout	Voter turnout in the elections.	Percentage point
Numb. of competitors (mayor)	The number of candidates for mayor.	
Left mayor	Takes the value 1 if the mayor is from the left, 0 otherwise.	Indicator
Right mayor	Takes the value 1 if the mayor is from the right, 0 otherwise.	Indicator
Competitors (council)	The number of candidates for council.	
HHI inverse	The effective number of parties in the council Inverse HerfindahlHirschman Index.	
Parl. coalitions vote share	The vote share of left in municipal elections.	Percentage point
Left vote share	The vote share of left in municipal elections.	Percentage point
Right vote share	The vote share of right in municipal elections.	Percentage point
Inde vote share	The vote share of independents in municipal elections.	Percentage point
Parl. coalitions man. share	The share of parliamentary's parties in the municipality council.	Percentage point
Left mandate share	The share of left in the municipality council.	Percentage point
Right mandate share	The share of right in the municipality council.	Percentage point
Inde mandate share	The share of independents in the municipality council.	Percentage point
Council&parl man.share	The share of council members with parliamentary mandate too.	Percentage point
Council&county man. share	The share of council members with county council mandate too.	Percentage point
Cycle 2 mandate share	The share of council members in their second term.	Percentage point
Cycle 3 mandate share	The share of council members in their third term.	Percentage point
Cycle 4 mandate share	The share of council members in their fourth term.	Percentage point
Males' man. share	The share of males in the municipality council.	Percentage point
Doctoral title's man. share	The share of council members with doctoral degree in the municipality council.	Percentage point

Table 20: The description of fiscal variables, all the monetary variables are corrected for inflation, all of them measured in 1,000 HUF per capita of, HUF in year 2002

Variable	**Description**
Total expenditures	Expenditures of local governments in the reference year.
1)Total current expenditures	Current (operational) expenditures of local governments.
a)Personal expenses	Personal expenses of local governments.
b)Socsec exp	Social security, employers local governments and health contributions of local governments.
c)Real current costs	Real costs and other current expenditures of local governments.
2)Capital formation exp	Capital-formation and capital expenditures of local governments.
a)Local capitalformation exp	Local-government expenditures for the accumulation of tangible assets, land and intangible assets.
3)Subsidies exp	Subsidies, withholdings and other current transfers by local governments.
a)Socialsup exp	Social political benefits provided by local governments.
b)Financial sup exp Financial sup	Local-government payments to recipients of local government support.
Total rev pc	Local government revenues in the reference year.
1) Local own rev pc	Own current revenues of local governments.
a)Local tax rev pc	Local-government revenues from local taxes.
2)Assigned taxes sum	Revenues assigned to local governments.
a)Assigned PIT sum	Personal income tax assigned to local governments.
b)Assigned vehtax sum	Motor vehicle tax assigned to local governments.
3)Total inv rev sum	Accumulation and capital type revenues of local governments.
a)Inv rev sum	Revenues of local governments from the sale of tangible assets, land and intangible assets.
4)Govern transfer rev sum	Government contributions and subsidies to local governments.
a)Intergovern trans rev sum	Normative subsidies to local governments.
b)Investment grant rev sum	The investment grants, the sum of two grants (the addressed and targeted grants).

Table 21: The control variables used in the econometric analyses, all the monetary variables are corrected for inflation, all of them measured in HUF of 2002

Variable	**Description**	**Unit of measure**
Enrolled 4-6	Population share of children enrolled in day nursery	Percentage point
Enrolled 7-14	Population share of children enrolled in primary school	Percentage point
Enrolled 14-18	Population share of children enrolled in in secondary school	Percentage point
Adult	Population share of adults between 18 and 59 years.	Percentage point
Old 60 share	Population share of adults older than 60 years	Percentage point
Unemployment	Population share of people seeking for job.	Percentage point
Taxbase per capita	Tax base in per capita terms and in HUF of 2002	1,000 HUF per capita
GP visits per capita	Visits at the office of the general practitioner per capita.	Per capita
GP ch visits per capita	Visits at the office of the paediatrician per capita.	Per capita
Hospital beds per capita	Hospital beds per capita.	Per capita
Hospital m beds per capita	Municipal financed Hospital beds per capita.	Per capita
Vehicles per capita	Vehicles in the municipality per capita.	Per capita
Water per capita	Water consumed in the municipality per capita.	1000 m^3 per capita
Sewage water per capita	Sewage water taken in the municipal sewage system per capita.	1000 m^3 per capita
Notary cent	Takes the value 1 if the municipality is a notary centre, 0 otherwise.	Indicator
Population	Population	Number of people
Offences	Publicly prosecuted offences.	Per 1000 capita
Adm.&Law Sector, Corruption Offences	Offences in the administrative and law enforcement sectors, corruption offences.	Per 1000 capita

Appendix B The legal framework

1994. évi LXIV. törvény a polgármesteri tisztség ellátásának egyes kérdéseiről és az önkormányzati képviselők tiszteletdíjáról - The Act LXIV. on the duties of mayors and the remuneration of councilmembers

Appendix C The data sources

- Hungarian Central Statistical Office - Gazetteer of Hungary, 1st January, 2016

  available at: $http://www.ksh.hu/docs/hun/hnk/hnk_2016.pdf$

- Hungarian Central Statistical Office - T-Star, The data was processed by The Databank Research Centre for Economic and Regional Studies, Hungarian Academy of Sciences.

  The dataset contains 3 164 settlements, which existed for at least one day since 1st January 1990. The period covered: 1990-2012, annually. The survey is analysing the endowments of Hungarys settlements, local development and measuring spatial inequalities.

  A T-star adatbázis a KSH tulajdonát képezi. A használt adatokat az MTA KRTK Adatbankja dolgozta fel.

- The data on crime for 2008 is from the Ministry of Interor's Unified Police and Prosecution Crime Dataset system - Egységes Rendőrségi Ügyészségi Bűnügyi Statisztikai rendszer (ERÜBS) - Belügyminisztérium

- National Election Office, The Municipality Elections dataset for the period 1990-2010

  available at: $http://valasztas.hu/hu/ovi/926/926\_4\_index.html$

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