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**FACULTY OF SOCIAL SCIENCES**  
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**The Political Budget Cycle of  
Municipalities in the Czech Republic**

Master's thesis

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## **Declaration of Authorship**

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Prague, December 21, 2023

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## Abstract

This thesis focuses on the political budget cycle at the municipal level in the Czech Republic. Using a sample of all 6 254 municipalities observed between 2010 and 2022, it examines whether elected councillors manipulate the public budget in an attempt to secure re-election. Using a fixed effects model, it analyses the influence of election and pre-election year on changes in the volume and structure of municipal expenditures. The thesis also offers a comparison of municipalities with extended powers, municipalities with an authorised municipal office and the remaining smaller municipalities. The results confirm the presence of a political budget cycle for all types of municipalities in the Czech Republic. Before elections, there is usually a reduction in current expenditures (especially in the area of administration) and a subsequent increase in capital expenditures (especially in the areas of transport, culture, sport and leisure activities), which are highly visible and attractive to voters.

**JEL Classification** H72, D72, R50

**Keywords** political budget cycle, municipal budget, self-government, municipalities, elections

**Title** The Political Budget Cycle of Municipalities in the Czech Republic

## Abstrakt

Tato práce se věnuje politicko-rozpočtovému cyklu na obecní úrovni v České republice. Na vzorku všech 6 254 obcí pozorovaných v letech 2010 až 2022 zkoumá, zda zvolení zastupitelé manipulují s veřejným rozpočtem ve snaze zajistit si znovuzvolení. Za pomoci modelu fixních efektů práce analyzuje vliv volebního a předvolebního roku na změny objemů a struktury obecních výdajů. Práce zároveň nabízí srovnání obcí s rozšířenou působností, obcí s pověřeným obecním úřadem a zbývajících menších obcí. Výsledky potvrzují přítomnost politicko-rozpočtového cyklu u všech typů obcí v České republice. Před volbami zpravidla dochází ke snižování běžných výdajů (zejména v oblasti administrativy) a následnému navyšování kapitálových výdajů (zejména v oblastech dopravy, kultury, sportu a zájmových činnostech), které jsou dobře viditelné a atraktivní pro voliče.

**Klasifikace JEL** H72, D72, R50

**Klíčová slova** politicko-rozpočtový cyklus, obecní rozpočet, samospráva, obce, volby

**Název práce** Politicko-rozpočtový cyklus obcí v České republice

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# Contents

List of Tables	viii
List of Figures	x
Acronyms	xi
<b>1 Introduction</b>	<b>1</b>
<b>2 Literature review of political cycles</b>	<b>3</b>
2.1 Concept and historical development of the political cycle theory	3
2.1.1 Opportunistic models . . . . .	3
2.1.2 Partisan models . . . . .	4
2.2 Recent developments in the political cycle theory . . . . .	6
2.3 Overview of studies from the Czech environment . . . . .	8
<b>3 Public Administration in the Czech Republic</b>	<b>11</b>
3.1 Municipalities . . . . .	12
3.1.1 Bodies of the municipality . . . . .	14
3.2 Municipal budget . . . . .	15
3.2.1 Revenues . . . . .	17
3.2.2 Expenditures . . . . .	17
<b>4 Data</b>	<b>22</b>
4.1 Data collection . . . . .	22
4.1.1 Budgetary data . . . . .	22
4.1.2 Political data . . . . .	22
4.1.3 Demography data . . . . .	24
4.2 Data preparation . . . . .	24
4.2.1 Data adjustments . . . . .	25
4.3 Dependent variables . . . . .	30

---

4.4	Independent variables . . . . .	37
<b>5</b>	<b>Methodology</b>	<b>41</b>
5.1	Unobserved effect models . . . . .	42
5.1.1	Fixed effect models . . . . .	43
<b>6</b>	<b>Results</b>	<b>45</b>
6.1	Total current and capital expenditures . . . . .	45
6.1.1	The effect of political affiliation . . . . .	46
6.2	Expenditure groups . . . . .	51
<b>7</b>	<b>Conclusion</b>	<b>55</b>
	<b>Bibliography</b>	<b>59</b>
<b>A</b>	<b>Appendix</b>	<b>II</b>

# List of Tables

3.1	Municipalities by population size in 2021 . . . . .	13
3.2	Example of expenditure classification by type . . . . .	16
3.3	Example of expenditure classification by sector . . . . .	16
4.1	Sources of political data . . . . .	24
4.2	Average expenditures per capita in election, pre-election, and non-election years . . . . .	31
4.3	Average revenues per capita in election, pre-election, and non-election years . . . . .	31
4.4	Summary statistics: dependent variables (MEP) . . . . .	34
4.5	Summary statistics: dependent variables (AMO) . . . . .	35
4.6	Summary statistics: dependent variables (BM) . . . . .	36
4.7	Summary statistics: independent variables (MEP) . . . . .	39
4.8	Summary statistics: independent variables (AMO) . . . . .	39
4.9	Summary statistics: independent variables (BM) . . . . .	40
5.1	Hausman test results . . . . .	42
5.2	Results of Wooldridge's test for serial correlation . . . . .	44
5.3	Results of Breusch-Pagan test for Heteroskedasticity . . . . .	44
6.1	Estimation results for total capital expenditures . . . . .	46
6.2	Estimation results for total current expenditures . . . . .	46
6.3	Estimation results for total capital expenditures with the effect of an affiliation to a traditional party . . . . .	48
6.4	Estimation results for total current expenditures with the effect of an affiliation to a traditional party . . . . .	48
6.5	Estimation results for total capital expenditures with the effect of political orientation . . . . .	49



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6.6	Estimation results for total current expenditures with the effect of political orientation . . . . .	50
A.1	Summary statistics: dependent variables (BM without Modrava)	II
A.2	Estimation results for capital expenditures per sector in MEP .	III
A.3	Estimation results for current expenditures per sector in MEP .	IV
A.4	Estimation results for capital expenditures per sector in AMO .	V
A.5	Estimation results for current expenditures per sector in AMO .	VI
A.6	Estimation results for capital expenditures per sector in BM . .	VII
A.7	Estimation results for current expenditures per sector in BM . .	VIII

# List of Figures

3.1	Municipal classification . . . . .	13
3.2	Expenditures by sector in 2021 . . . . .	19
3.3	Composition of expenditures on public services in 2021 . . . . .	20
4.1	Election expenditures . . . . .	26
4.2	Development of total revenues and expenditures . . . . .	27
4.3	Development of total expenditures by class . . . . .	27
4.4	Development of total revenues by class . . . . .	28
4.5	Development of expenditures by class net of social benefit . . . . .	29
4.6	Development of revenues by class net of social benefit . . . . .	29
4.7	Percentage distribution of revenue based on type of municipality and type of year . . . . .	32
4.8	Distribution of municipality budget balance per capita . . . . .	33
6.1	Estimation results for the sectoral breakdown of capital expen- diture . . . . .	52
6.2	Estimation results for the sectoral breakdown of current expen- diture . . . . .	54

# Acronyms

**CZSO** Czech Statistical Office

**IČO** Company (Municipality) identification number

**BM** Basic Municipalities

**AMO** Municipalities with an Authorised Municipal Office

**MEP** Municipalities with Extended Powers

# Chapter 1

## Introduction

Individuals seeking political office are motivated by various factors. In the ideal scenario, their interest stems from a genuine desire to contribute to society's well-being. However, more realistic motivations are likely to include ambition, visibility, prestige or desire for power. If an individual derives satisfaction from political engagement, it is highly probable that they will actively pursue re-election. When politicians behave opportunistically, they can also manipulate the public budget just before elections, such as through tax reductions or directing investments towards projects with immediate and conspicuous visibility. This dynamic consequently creates a political budget cycle.

This thesis examines the political budget cycle in the Czech Republic at the municipal level. It builds on foreign studies (Veiga & Veiga 2007) as well as studies from the Czech environment, which, however, focus only on municipalities with extended powers or regions (Sedmíradská *et al.* 2011; Štastná 2015; Bendžíková 2018). This study employs a significantly larger dataset, encompassing data from all 6 254 Czech municipalities in the time period between 2010 and 2022, which also gives us the opportunity to compare different types of municipalities with each other. Given the municipalities' restricted capacity to impact their revenues significantly, attention is directed towards the examination of expenditures. The main objective is to determine whether elections induce changes in both the magnitude and composition of municipal budget expenditures. We also examine whether the behaviour of representatives of traditional political parties differs from that of independent or local candidates.

The thesis is structured as follows. Chapter 2 is dedicated to the review of existing literature. Chapter 3 describes the public administration system in the Czech Republic and presents in detail the structure of municipalities'

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revenues and expenditures. Chapter 4 provides a comprehensive description of data collection and preparation along with detailed data exploration. Chapter 5 is devoted to the selection of methodology, Chapter 6 presents the empirical results, and finally Chapter 7 summarises our findings.

# Chapter 2

## Literature review of political cycles

### 2.1 Concept and historical development of the political cycle theory

#### 2.1.1 Opportunistic models

Already Downs (1957) claimed that political parties in a democracy formulate policy primarily to gain votes. Rather than seeking elections with the goal of implementing specific policies, political parties formulate their policies to appeal to the voters and secure office. Downs (1957) contradicts the earlier economic view of government decision-making as perfectly altruistic, with the sole motivation of maximising social welfare. Instead, he emphasises the pursuit of income, power and prestige associated with holding office as the goal of governments and incumbent politicians.

The theoretical formulation of political cycles dates back to the 1970s. It was Nordhaus (1975) who proposed a pioneering formal model of the political business cycle in which incumbent politicians would manipulate the economy to gain electoral benefit. The basis of this model lies in the trade-off between inflation and unemployment, represented by the Phillips curve. It follows up on previous investigations of voter behaviour, indicating that voters are sensitive to macroeconomic indicators. A rise in the overall unemployment rate serves as information to individuals that their wages can decrease or they can even lose their jobs since their replacement is now easier. Inflation, on the other hand, may be perceived as an additional tax on income, resulting in a negative perception of both – high unemployment and inflation.

The model assumes opportunistic parties trying to influence the develop-

ment of the economy depending on the date of the elections. According to the model, the incumbent politicians stimulate the economy via expansionary monetary policy and lower the unemployment rate before the elections, thereby securing the support of the myopic voters. An increase in inflation will show up with a delay after the elections. The election winner will apply restrictive measures immediately after the election to fight inflation, which will cause unemployment to increase again.

Nordhaus's model assumed that voters have adaptive expectations, meaning the expectations are formed based on past observations. With adaptive expectations, the public fails to anticipate the pre-election stimulus and its inevitable consequences in each electoral cycle. The subsequent development of economic thinking and the revolution of rational expectations ruled out the possibility of voters being deceived in the same manner in repeated elections. For rational expectations, individuals do not only look to the past but consider all available information relevant to their expectations. In doing so, individual estimates may not be completely accurate, yet at the aggregate level, these errors tend to cancel each other out.

Rogoff & Sibert (1988) introduced a new explanation of electoral cycles reflecting (voter's) rational expectations, replacing voter myopia with the concept of asymmetric information. They proposed a model in which governments differ based on the voters' perception of how competent they are. "*The more competent that a government is, the less revenue it needs to provide a given level of government services*" (Rogoff & Sibert 1988, p. 2). Naturally, voters prefer a more competent government, which motivates the incumbent politicians to try to signal their competency by higher public spending right before the elections. The responsiveness of rational voters to this manipulative behaviour is explained by temporary information asymmetry since the government observes an indicator of its performance more quickly than the voters can.

### 2.1.2 Partisan models

The models described above can be referred to as opportunistic. The designation stems from the opportunistic behaviour of political parties that try to reach as many voters as possible, regardless of their preferences, with the simple aim of winning elections. They try to gain popularity by implementing pleasant measures before elections and unpopular ones after elections. On the other side stands the ideological view of the parties' behaviour. Ideological parties do not

try to reach all voters with their policies but rather a narrow group of voters within their political orientation.

The basic partisan model was introduced by Hibbs (1977), and it is based on the observation that right-wing and left-wing parties have different macroeconomic objectives stemming from different attitudes towards economic issues. Hibbs (1977) argues that governments pursue macroeconomic policies broadly in accordance with the objective economic interests and subjective preferences of their class-defined core political constituencies. Left-wing parties are usually elected by the lower income and occupational status groups, who prefer relatively low unemployment and high inflation macroeconomic configuration. On the other hand, high unemployment and low inflation are more compatible with the interests of the upper-income class. This macroeconomic configuration was observed in political systems dominated by centrist and rightist parties.<sup>1</sup>

A basic criticism of the original Hibbs' model is, same as for Nordhaus' model, the assumption of irrational voters with the adaptive formation of expectations. The adjustment of the model to rational expectations was first made by Alberto Alesina (1987). His rational-partisan model refers to the expectations-augmented Phillips curve and explains the existence of a cycle by the uncertainty of the election outcome. The public does not know which party will be in office in the next period. Rational voters expect the average of inflation, which the individual parties would set, weighted by the probabilities of electoral outcomes. This expectation always leads to inflation surprises.

Drazen (2000) in his paper *The Political Business Cycle after 25 Years* summarises, inter alia, a conceptual assessment of the rational-partisan model. Although elections are an important source of fluctuations because their results are not fully predictable, the election date is fully known in advance. The participants can easily remove the negative effect of uncertainty by postponing their actions, such as signing nominal wage contracts until after the elections so that they can reflect on the election results.

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<sup>1</sup>All voting blocs exhibit a strong aversion towards inflation. However, supporters of left and right parties differ in the emphasis they place on unemployment and inflation. Since the low-income groups tend to hold only human capital, they are more concerned about rising unemployment, while high-income groups hold the major share of financial capital and also occupy more secure jobs (Hibbs 1992).



## 2.2 Recent developments in the political cycle theory

Current studies devoted to the theory of the political cycle follow the models presented above. Moreover, they often combine opportunistic and partisan perspectives since usually one theory cannot be confirmed at the expense of another. For example, it cannot be ruled out that even a government with strong ideological beliefs will not switch to opportunistic behaviour to secure re-election and then enforce its ideology. Politicians probably combine their career interests with their ideological motives.

An important shift from the original models is the focus on fiscal policy. The original models assumed government control over monetary policy with the impact on macroeconomic variables such as unemployment. Brender & Drazen (2008) mention that measures of economic performance might not affect the voters' decision-making or a sudden economic growth in the election year can be perceived as suspicious and influence the decision negatively.

Moreover, in practice, the independent central bank controls the monetary policy in most countries. The government is thus left with a fiscal policy, which, unlike monetary policy, can affect the voters more directly. The latest models, therefore, tend to examine fiscal indicators such as the size of government deficit or the level of taxes, transfers or spending (Bláhovec 2009).

The model by Rogoff and Silbert, which was already mentioned in Subsection 2.1.1, can serve as a first example since the government tried to signal their competency by higher public spending right before the elections. Additionally, Rogoff (1990) summarised that empirical studies have yielded mixed results for electoral cycles in national output, unemployment and inflation. He turns the attention to cycles in taxes, transfers and government consumption spending, highlighting that for these variables, one can also look at data for local elections instead of focusing on the small number of observations available at the national level. The advantage of sub-national data lies in common political systems, similar economic environments and budgetary processes among territorial units (Kneebone & McKenzie 2001).

Persson & Tabellini (2003) analysed whether the fiscal policy variables display systematic patterns before and after elections and whether they differ among different political systems or electoral rules. They used panel data from sixty democratic countries from 1960 to 1998. Regardless of the political sys-

tem, the results show a pre-election as well as a post-election cycle in fiscal policy. Specifically, taxes are cut before elections, while unpopular fiscal adjustments, such as spending cuts or tax hikes, tend to be postponed until after the elections. But a closer look revealed that the post-election adjustments only occur in presidential democracies, while pre-election tax cuts are more pronounced in parliamentary democracies. Moreover, the authors also focused on the differences between majority and proportional electoral systems. Majoritarian electoral rules are characterised by lowering spending before elections, while countries with the proportional system, where politicians try to appeal to the largest possible group of voters, are associated with an increase in welfare spending before as well as after the elections.

A couple of recent studies have also focused on sub-national governments. Kneebone & McKenzie (2001) investigated the fiscal policy choices of 10 Canadian provincial governments from the period 1966-1997. On the revenue side, tax increases were temporarily suspended in election years. On the expenditure side, politicians tend to decrease spending on health, social services and industrial development, while spending on education, transportation, and culture increases in election years. The results align with Rogoff's signalling theory (Rogoff 1990; Rogoff & Sibert 1988). The provincial governments try to signal their competence through expenditure increases in areas that are visible and clearly identifiable as their responsibility.

At the municipal level, Veiga & Veiga (2007) dedicated their work to the examination of behaviour across 278 Portuguese municipalities.<sup>2</sup> They confirmed the presence of a political cycle, as they observed a reduction in municipal taxes in the year preceding elections, accompanied by an escalation in budget deficits and expenditures. In their study, the authors directed their attention not solely towards the magnitude of expenditure but also to the specific composition of capital investment expenditure. They concluded that mayors manipulate the composition of expenditures to prioritise items that are highly visible to voters in an attempt to signal their competence. Furthermore, the authors point out that fluctuations in investment expenditures lead to inefficient resource allocation, which negatively impacts the entire economy.

The focus of the present research builds on the foundations used by, for example, Kneebone & McKenzie (2001) or Veiga & Veiga (2007). Primarily, this

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<sup>2</sup>In contrast to the Czech Republic, where the municipality represents the smallest self-governing unit, Portugal adopts a different administrative structure. Portuguese municipalities are further subdivided into counties (*freguesias*).

entails focusing on lower-tier self-governing entities within the framework of a single state. Secondly, it involves the decomposition of expenditures into distinct groups. Last but not least, the research addresses the influence of political factors on budget fluctuations. However, the results suggest that opportunistic motives generally prevail over ideological ones. Among the latest studies, we can mention Olejnik (2022), who researched investment expenditures among Polish local governments.

### 2.3 Overview of studies from the Czech environment

The study of the political cycle does not have a very long history in the Czech Republic. First, the presence of democracy is needed to test the existence of a political cycle. However, the first years after the collapse of the communist regime are also not suitable for this field of research. As pointed out by, for example, Štiková (2007) or Černohorský & Černohorská (2009), the Czech economy went through a period of complicated transformation to a market economy in the 1990s. This period was accompanied by multiple structural changes and several specific shocks, resulting in a relatively short time series available to researchers.

Štiková (2007) examined the electoral effects on macroeconomic variables – GDP, unemployment and inflation. The study partially confirmed the presence of the political business cycle in the Czech environment and the validity of opportunistic motives in the behaviour of incumbent politicians. A tendency towards higher GDP growth and a decrease in the unemployment rate was observed before the parliamentary elections. Partisan theories have not been supported. However, this is rather due to the limited observation possibilities since there was only one change of majority ruling party in the examined period. Moreover, the macroeconomic trends were strongly affected by the already-mentioned economic transformation in the 1990s.

*The Political business cycle in Czech municipalities* by Sedmířadská *et al.* (2011) was the first paper dedicated to the municipal level in the Czech Republic. Data from 205 municipalities of extended scope for the period 2001–2007 were used. The results confirmed that the politicians seeking re-election manipulate public expenditures before elections. Specifically, they decrease current expenditures with the aim of saving and then use the budget savings for capital

expenditures, which are more attractive and visible to the voters. However, Sedmihradská *et al.* (2011) also claim that increasing capital expenditures did not help the incumbents to be re-elected. The authors assume that there is a high degree of perceived corruption at the municipal level and that voters suspect the politicians of benefiting personally from the realisation of the projects.

Šťastná (2015) also analysed the political cycle among 205 municipalities with extended powers over the period 1997-2013. The results show that municipalities tend to increase capital expenditures before elections, while current expenditures decline. In addition to the classical division between current and capital expenditures, the paper also provides insights into disaggregated expenditures. Individual sectors such as infrastructure, education or administration were explored to show which specific area of spending is targeted before elections. Moreover, a whole range of characteristics of municipalities that may influence expenditure manipulation was considered, starting with typical factors, such as population size and density, to more novel ones, such as the mayor's experience or the connection to national elections. Regarding the sectoral distribution of capital spending, the most targeted groups before elections are infrastructure, housing and leisure activities, which are perceived as attracting more votes. Capital expenditures on education and social services are also targeted to some extent since they increase particularly in the pre-electoral year. This can be explained by the typical time delay between the investment and the actual realisation that the voter can perceive. Big cities also tend to increase expenditures on environmental protection (Šťastná 2015).

From the point of view of ideology, the author found out that left-wing governments tend to decrease capital spending on housing and education before elections while increasing the current spending on social services. On the other hand, right-wing governments target more capital spending on leisure activities. A lower incentive to create an electoral cycle was found in municipalities where a new mayor was elected and also where the mayor's party received more than 50% of votes in previous elections (Šťastná 2015).

Bendžíková (2018) investigated the existence of political-budget cycles at the regional level in the Czech Republic. She concluded that there was present evidence for political-budget cycles over the period 2001-2016, which was characterised by a significant expenditure increase in the pre-electoral and the electoral years in comparison with the non-electoral years. For current expenditure, the author observed an increase, especially in the areas of culture, health, and environmental protection, with a maximum in an election year. Capital expen-

diture, which is inherently long-term and whose impact is perceived with a lag, was already increasing in the pre-election year.

The main goal of Bajgarová (2021) was to explore the relationship between municipalities' budgets and GDP, which stands as a proxy for economic growth. However, the author also tested the hypothesis of the presence of political budget cycles in Czech municipalities. The results suggest that expenditures are manipulated in the pre-election period and that the increase in capital expenditures is more distinctive than the increase in current expenditures. Important variables influencing expenditure changes are population size and scope of competence.

## Chapter 3

# Public Administration in the Czech Republic

There is a two-tier system of territorial administration in the Czech Republic that is enshrined in the Constitution of the Czech Republic. Fundamental self-governing units are municipalities, while regions are higher self-governing units. Each territorial self-governing unit has its own competencies, which cannot be interfered with by another territorial self-governing unit. Both types of territorial self-governing units exercise their own competencies as well as state administration in delegated competence, which may also be referred to as a joint model of public administration. Till 1990, territorial public authorities were called National Committees, which cannot be considered self-governing in the true sense of the word since they were subject to the communist party. Municipal self-government was re-established in the Czech Republic in 1990 by the Act on Municipalities No. 367/1990 Coll. The re-establishment of municipal self-government followed a long tradition of local self-government from the second half of the 19th century and the first half of the 20th century. District national committees were replaced by district offices devoted solely to state administration. This arrangement and the existence of district offices were intended as a short-term solution. The plan was to eventually set up higher self-governments. However, this transition was postponed and complicated by disputes regarding their organisation (Ministry of Interior 2004).

The higher level of self-government was introduced by the Constitutional Act No. 347/1997 Coll. However, the first regional elections were not held until November 2000 because it was necessary to determine specific competencies and the way of organisation of regions besides their territorial delimitation. The

Czech Republic was divided into 14 regions, which correspond to the European standardised classification of territorial units NUTS-3. Since the average size of regions is 2.5 times smaller in terms of the number of inhabitants and four times smaller in terms of the surface area in comparison with the average NUTS-2 in the European Union, so-called areas at the level of NUTS-2 were created purely for statistical monitoring and analysis (Ministry of Interior 2004).

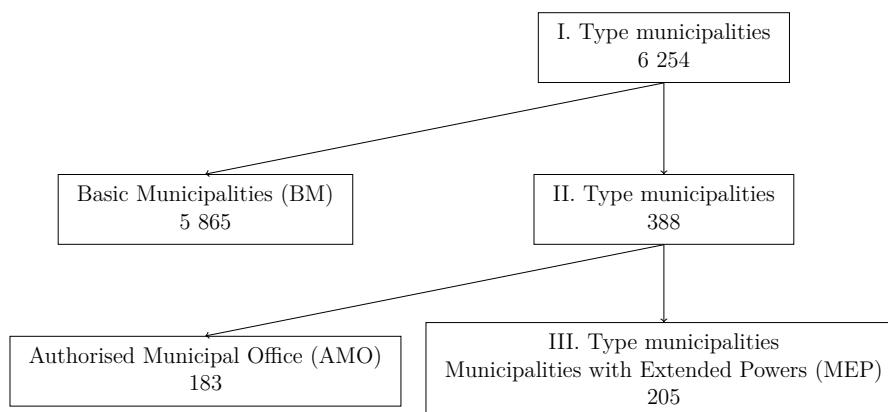
### 3.1 Municipalities

The Act on Municipalities defines a municipality as a “*basic territorial self-governing community of citizens, it forms a territorial unit which is defined by the borders of the territory of the municipality*” (Act on Municipalities No. 128/2000 Coll.). A municipality is a public council that can have its own property and operate according to its own budget. The purpose of a municipality is to attend to the general development of its territory and to the needs of its citizens. Usually, a municipality with at least 3 000 inhabitants carries the designation of a city. The Municipalities Act regulates a special category of 26 large cities designated as statutory cities, which have the right to further break down internally into city districts. The capital city of Prague acts simultaneously as a municipality and a region and is regulated by special Act No. 131/2000 Coll., on the capital city of Prague.

Based on the extent of the performance of the state administration in the delegated powers, we distinguish between Type I, Type II, and Type III municipalities. All 6 254 municipalities can be classified as the first type as they exercise the basic scope of delegated competence. Municipalities of the second type are characterised by the presence of an authorised municipal office, and they perform state administration not only for their own citizens but also for citizens of other municipalities falling within their administrative district (Ministry of Interior 2017). Typical competencies specific to the authorised municipal office are the competence of the registry office and the competence of the building office. During the reform of the territorial public administration, 205 municipalities of the third type were further selected from second-type municipalities, which are called municipalities with extended powers. According to Hemmings (2006), the municipalities with extended powers took over about 80% of the tasks carried out by the former administrative districts. The competencies of these municipalities include, for example, the issuance of travel and personal documents, as well as driver’s and trade licenses.

Figure 3.1 represents the described municipal subdivision.<sup>1</sup> For the purpose of our forthcoming analysis, it also defines disjunctive sets of municipalities BM, AMO, and MEP.

Figure 3.1: Municipal classification



Hemmings (2006) also points out that the average size of Czech municipalities is one of the smallest in the EU, indicating the presence of numerous very small units. Local government is therefore very fragmented. According to the data from the Czech Statistical Office (CZSO) presented in Table 3.1, approximately 50% of the Czech Republic municipalities have a population below 500 residents. Nearly 90% of the municipalities have a population of 2 000 inhabitants or less.

Table 3.1: Municipalities by population size in 2021

Population Range	No. Municipalities	% of Municipalities	Cumulative %
0 - 100	425	6.8%	6.8%
100 - 500	2 966	47.4%	54.2%
500 - 1 000	1 370	21.9%	76.1%
1 000 - 2 000	781	12.5%	88.6%
2 000 - 5 000	440	7.0%	95.7%
5 000 - 10 000	143	2.3%	97.9%
10 000 - 100 000	123	2.0%	99.9%
100 000 - 1 000 000	5	0.1%	100.0%
1 000 000 +	1	0.0%	100.0%

Note: Data available from the Czech Statistical Office, own processing

<sup>1</sup>Prague is considered a municipality, but due to its special character, it does not enter into the further division of municipalities.



### 3.1.1 Bodies of the municipality

The municipality is independently managed by a municipal council whose members are elected among the population. Elections to municipal councils are held based on universal, equal, and direct suffrage by secret ballot following the principles of proportional representation. The elections are held regularly every four years. The number of seats on the council is determined primarily by the municipality's population and ranges from 5 to 55. If no elections are held in the municipality, the Ministry of the Interior appoints a municipal administrator from among state employees. However, the municipal administrator is not a complete replacement for the regular municipal bodies and has limited powers. Establishing an administrator is intended only as a temporary solution until a new council is elected (Ministry of Interior 2022).

The council elects the municipal board, the mayor, and the deputy mayor or deputy mayors from among its members (Act on Municipalities No.128/2000 Coll.). The Municipal Act does not explicitly regulate the election process for the mayor, as the specific procedure is typically established through the rules of procedure issued by the municipal council. The voting method employed during the election can either be public or secret, solely at the discretion of the municipal council. Before the actual election takes place, a proposal is put forward to nominate a candidate for the vacant position of mayor. The nominated individual must consent to be considered for the mayor's office. A valid election requires the consent of a supermajority of all municipal council members (Účetní portál 2016).

The municipal council also decides whether or not the mayor will be excused from his civil profession. For the purposes of this paper, we will use the terms, full-time mayor and part-time mayor. The part-time mayor is not excused from his current employment and performs the function of mayor in his free time. The phenomenon of part-time mayors is mainly associated with small municipalities. According to Šaradín *et al.* (2019), there is a common perception explaining the phenomenon of part-time mayors by the fact that part-time mayors have fewer work responsibilities because they live in smaller municipalities. In practice, the financial aspect often plays a crucial role for many municipalities when determining the type of mayor who will lead them. The smallest municipalities especially cannot afford a full-time paid mayor for financial reasons. The Municipal Act states that a part-time mayor is entitled to a remuneration ranging from 0.3 to 0.6 times the amount of remuneration

that would be paid to a full-time mayor. Suppose the municipal council does not explicitly determine the part-time mayor's remuneration. In that case, he is entitled to a remuneration of 0.3 times the remuneration that would be paid to a full-time mayor. The specific amount of remuneration of members of the councils is currently regulated by Government Regulation No. 318/2017 Coll. A key determinant of remuneration levels is the population of the municipality.

According to Palguta & Pertold (2018), Czech local politicians are relatively poorly paid in international comparison. Palguta & Pertold (2018) investigated whether raising local representatives' pay can motivate citizens to stand for election and thus improve the selection of elected councillors. Municipalities with less than 1 000 inhabitants were used for this purpose since pay for local representatives in these municipalities was raised rather sharply at the end of 2017. The authors established that higher pay for local representatives increases political competition. They also concluded that higher pay positively influences the number of elected candidates with university degrees. Additionally, the rise in remuneration leads to an increase in the share of representatives from managerial, specialist, and administrative professions.

In municipalities with at least a 15-member municipal council, the representatives elect a municipal board from among themselves. The municipal board has an executive function in the area of independent competence. The mayor represents the municipality externally and stands in the municipal office's lead. Within the scope of its independent competencies, the municipal office fulfils the tasks assigned by the municipal council or the municipal board and carries out delegated powers.

Every year, the municipality is also required to request a review of its economy by the regional office or the auditor. Šaradín *et al.* (2019) tried to confirm the hypothesis that a full-time mayor who has more time at his disposal performs his duties better than a part-time mayor. Using a sample of municipalities from the Central Bohemia and Olomouc regions, they concluded that in municipalities with part-time mayors, the results of the review of the municipality's economy more often found deficiencies. However, the deficiencies mentioned were usually of low severity.

## 3.2 Municipal budget

As already mentioned, a municipality is a public council that can have its own property and operate according to its own budget. The budgetary process

of municipalities is defined by Act No. 250/2000 Coll. on budgetary rules of territorial budgets. A municipality's financial management is governed by its annual budget and medium-term budget outlook. The municipality's budget for the following calendar year is usually approved by its council at the end of the previous year. It follows the budget outlook and data from the state budget schedule. The medium-term budget outlook is compiled habitually for 2 to 5 years following the year for which the annual budget is drawn. It is based on entered contractual relationships and commitments. The budget is usually drawn up as balanced and serves as a financial plan that governs the financing of the municipality's activities. The budget comprises revenues, expenditures, and other monetary operations (Act No. 250/2000 Coll.).

It is not only the knowledge of the total amount of projected revenue that plays a role in setting the budget but also its precise breakdown. The systematic and uniform classification of budget revenues and expenditures is referred to as the budget composition (Deník veřejné správy 2012). The Ministry of Finance determines the budget composition via the Decree on the budget composition No. 412/2021 Coll., and it defines the classification units by which municipalities are required to designate their revenues, expenditures, and way of financing the budget. The basic unit for sorting by type is an item, while the basic unit for sorting by sector is a paragraph. Both items and paragraphs serve as a four-digit classification key, indicating to which higher classification unit it belongs. The concept of this categorisation can be represented by the following example of how a purchase of a fire truck should be classified.

Table 3.2: Example of expenditure classification by type

Class 6	Capital expenditures
Grouping of items 61	Investment purchases and related expenditure
Subgrouping of items 612	Purchase of tangible fixed assets
Item 6123	Means of transport

Table 3.3: Example of expenditure classification by sector

Group 5	National security and legal protection
Section 55	Fire protection and integrated rescue system
Subsection 551	Fire protection
Paragraph 5512	Fire protection – voluntary part

### 3.2.1 Revenues

According to the Decree on the budget composition No. 412/2021 Coll., we can divide the revenues of municipalities based on the legal reason for payment into four basic categories: tax revenues, non-tax revenues, capital revenues, and transfers.

The primary resource of municipalities is tax revenues, which accounted for 65% in 2021. They are formed mainly by value-added tax, personal income tax, and corporate income tax. These taxes are so-called shared since they are collected from people on a national level and then re-distributed between each level of public budgets – municipalities, regions, and state according to the law. There has been a significant increase in total tax revenues, amounting to nearly 11% compared to 2020. This increase is primarily attributed to the rise in the municipalities' share of shared taxes, which has grown from 23.58% to 25.84%. Key indicators for determining the share of tax revenue between municipalities are the number of inhabitants, the size of the cadastral territory, and the number of children in kindergartens and primary schools (Act on budgetary determination of taxes No. 243/2000 Coll.). Exclusive tax revenues include, for example, real estate tax, the entirety of which belongs to the municipality where the property is located. Minor contributions consist of local fees such as dog fees, fees for the use of public space, or fees for recreational stays.

Transfers are the second most important source of municipal income. In 2021, they amounted to approximately 22%. Transfers consist of financial support provided by various levels of public budgets, including the budget of the European Union or other foreign institutions. We can distinguish specific subsidies, which have a pre-defined use, and untargeted subsidies. Specific subsidies are usually connected with the municipality's delegated powers, and when they are not spent, they need to be returned. On the other hand, the untargeted subsidies may be used at the municipality's discretion, but the fulfilment of specific criteria usually conditions their acquisition.

Non-tax revenues make up approximately 10% and include income from own economic activity, donations, or renting a property. Marginal income is then capital revenues, which accounted for 3% in 2021.

### 3.2.2 Expenditures

Two main categories of expenditures are capital and current expenditures. Current expenditures have long dominated the municipal budget. In 2021, they

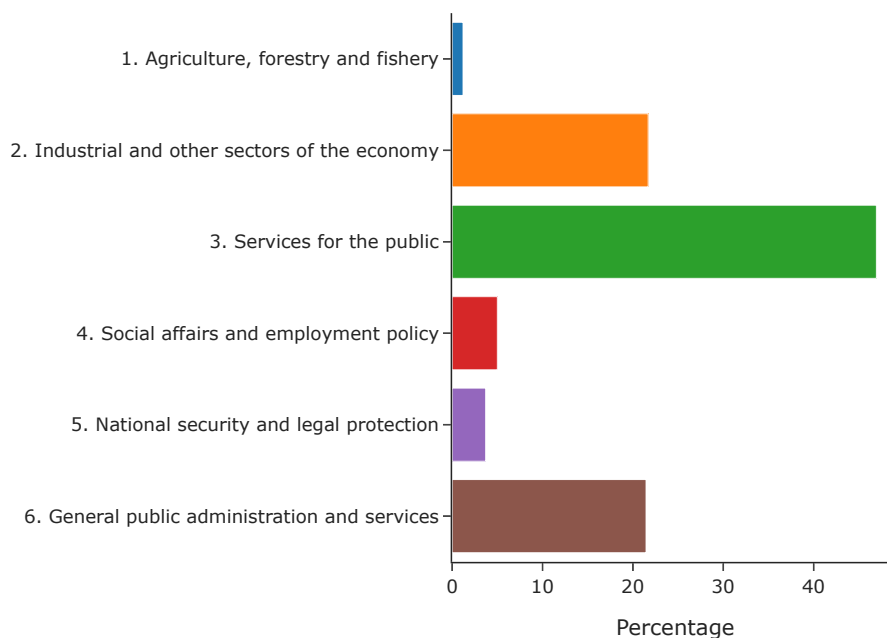
represented nearly 73%. Current expenditures encompass the day-to-day operational expenses incurred by municipalities to ensure the smooth functioning of public services and the maintenance of existing infrastructure. These expenditures are recurrent in nature and are typically associated with the regular operations, maintenance, and administration of municipal activities. Current expenditure is also characterised by having an immediate impact on the provision of services and the day-to-day operations of municipalities. They consist of salaries and other payments for work performed together with compulsory insurance paid by the employer. Another significant part consists of service purchases, expenditures on transport territorial services, or purchase of materials, water, and energy. However, non-investment transfers to contributory and similar organisations are the most significant component of current expenditures. Contributory organisations are usually from the field of education, culture, or social services, and they serve to ensure public benefit activities.

Capital expenditures account for approximately 27% of total expenditures. They represent long-term investments aimed at improving the municipality's infrastructure and promoting economic growth and development. Capital expenditures are typically part of the municipality's long-term strategic planning, addressing infrastructure gaps, accommodating population growth, or improving service delivery. Unlike current expenditures, capital expenditures are often one-time investments in fixed assets. These include, for example, purchases of buildings, land, machines, and equipment. Another difference with current expenditure is that the impact of capital investments on citizens may be delayed.

The second way of disaggregating expenditures is by sector. It is a classification in terms of the activity on which the expenditure is spent. The Decree on the budget composition No. 412/2021 Coll. distinguishes six groups:

1. Agriculture, forestry, and fishery
2. Industrial and other sectors of the economy
3. Services for the public
4. Social affairs and employment policy
5. National security and legal protection
6. General public administration and services

Figure 3.2: Expenditures by sector in 2021



Note: Data available from the Ministry of Finance, own processing

Figure 3.2 shows the percentage of total municipalities' expenditures in each sector in 2021<sup>2</sup>. The graph shows that the different sectors are unevenly represented.

**Agriculture, forestry, and fishery** represent the smallest expenditure group. However, it is still an important sector that significantly impacts the creation and maintenance of the environment. Over 90% of the financial resources allocated to this sector are directed explicitly toward forestry, reflecting the substantial coverage of forests across the territory of the Czech Republic.

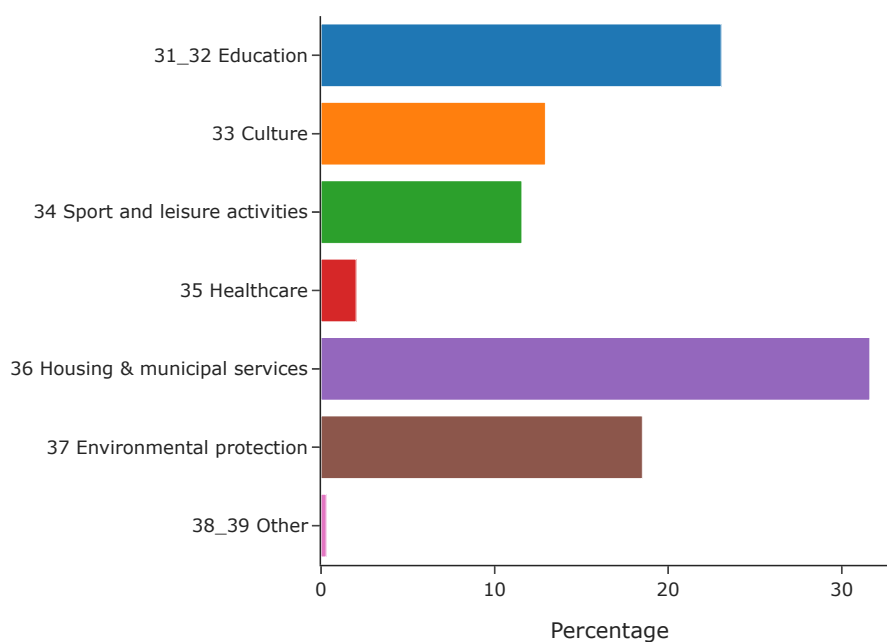
One-fifth of total expenditure flows to the **Industrial sectors of the economy**. The most costly sector is certainly transportation. Within this sector, municipalities allocate significant funds towards the maintenance and repair of roads, as well as sidewalks or parking facilities. These investments are crucial for ensuring the safety and functionality of the transportation infrastructure within the municipalities. Additionally, municipalities allocate resources toward

<sup>2</sup>The year 2021 was chosen for illustrative purposes, however, the share of each sector has mostly stayed the same between 2010 and 2022.

providing transportation services to the public, such as public transportation networks. This includes funding for buses, trams, and other means of public transit that serve residents. The second most important item from the industrial sector is water management, which accounts for around 30% of expenditures from this sector. This mainly concerns the maintenance and repair of water and sewerage systems.

**Public services** constitute the most significant component of municipal expenditures, accounting for nearly 50% of the total budget. Figure 3.3 provides a more detailed breakdown of these expenditures.

Figure 3.3: Composition of expenditures on public services in 2021



Note: Data available from the Ministry of Finance, own processing

The most considerable portion within this category is allocated to housing, municipal services, and territorial development. This includes housing management expenses, municipal facility maintenance, and urban development initiatives. Additionally, services such as public lighting are also encompassed within this sector. Another important sector is education spending, although not all municipalities have a kindergarten or primary school. Most of the non-investment expenditures of schools defined as direct expenditures on education

(costs on salaries of pedagogical employees, training of pedagogical staff, purchase of textbooks, increased expenditures on the education of pupils with special needs, etc.) are covered by the state budget. The municipalities, as founders, are responsible for non-investment funds for operations and investment funds for construction and reconstruction (Svaz měst a obcí 2022). The environmental protection section also represents a significant expense for municipalities, encompassing activities such as waste collection and the care of the appearance of municipalities and public greenery. Municipalities also allocate funds for cultural initiatives, which commonly encompass support for theatres, museums, and libraries, as well as the preservation of historical monuments and the care of cultural heritage. Sports and leisure activities are also worth mentioning in the context of attracting voters, although spending on these is not as high compared to other areas.

Less costly are the sectors **Social affairs and employment policy** and **National security and legal protection**. The most significant social affairs costs are nursing homes and care services. Regarding security, municipal expenditure goes towards maintaining public order, usually through the municipal police, which the municipality can set up. At the same time, this also includes support for municipal volunteer fire brigades.

The last group is **General public administration and services**, which accounted for 22% of total expenditure in 2021. These are the costs of local government and council activities.



# Chapter 4

## Data

This chapter describes the dataset used for the empirical analysis. Section 4.1 describes all data sources used, while Section 4.2 explains all adjustments made, merging all datasets, and creating the final one.

### 4.1 Data collection

#### 4.1.1 Budgetary data

The key data for our analysis is data on the budget fulfilment of individual municipalities. Budget and accounting information from all levels of state administration is publicly available at the Ministry of Finance's specialised information portal (Monitor). Budget fulfilment of territorial self-governing units is monitored using a financial statement FIN 2-12 M. Annual data from 2010 to the present are available in the Monitor. Each year's directory in the form of `YYYY_12_Data_CSUIS_FINM.zip` contains six CSV files that include different parts of the financial statement. The revenue and expenditure broken down by budget composition are available in the first part `FINM201_YYYY012.csv`.

#### 4.1.2 Political data

Which sector to invest in can also be largely influenced by the political orientation of decision-makers. To test the hypothesis whether the manipulation of the municipal budget depends on political affiliation, we need to know the political party in power. We assume that the political affiliation of the mayor is the best representation of which political party has the real decision-making power. If we relied only on the election results of individual parties, we would

not be able to reflect coalition relations. In practice, the party with the highest number of votes can easily fall into opposition. In addition, several parties can gain the same number of mandates.

Results of local councils' elections are provided by the Czech Statistical Office. However, the CZSO only provides information on elected representatives. The election of the mayor then takes place individually in each municipality. To the best of our knowledge, there is no publicly available database of mayors elected. The Ministry of the Interior only provides a contact directory of currently serving mayors without historicisation. Navrátilová (2021), who addressed the issue of political connections and distortions in public procurement markets, utilised the contact directory to obtain data about mayors serving in the office since 2018. Using web scraping, she also collected information about most mayors elected in 2014 from the Central Notification Register, which the Ministry of Justice operates. Since Navrátilová (2021) already made many hand-made adjustments to allow the data to be processed further and also to ensure their reasonable quality, we will take advantage of the dataset she created.

For the elections that took place in 2010, Navrátilová (2021) estimated who could be elected as a mayor based on two classifiers: the candidate with the highest total number of votes received in a given municipality and the candidate with the most votes from the winning political party. The accuracy of these estimates was tested on the data from 2018 and 2014. The approximation using the most elected candidate from the winning party proved to be quite successful, with an accuracy of around 80%. However, it could only be used in cases where elections yield a strict victory of exactly one political party based on the number of mandates acquired.

We decided not to follow in these footsteps because we found another source – the electronic portal of local governments (ePUSA). ePUSA is a collaborative project of the Ministry of the Interior, regions and other local governments. This project aimed to be the only guaranteed source of contacts to public authorities – regions, municipalities and cities. However, this vision has not been fulfilled, and the portal is currently becoming obsolete. Nevertheless, it can be used to retrieve historical data. We have obtained paired data of the mayor's name and municipality identifier using web scraping. From the CZSO, we downloaded the register of candidates, the register of electoral parties and the relevant codebook in order to determine the political affiliation of each mayor. For each municipality, we tried to match the mayor's name from ePUSA with the name

from the respective register of elected candidates. Due to typing errors, a couple of manual adjustments had to be made.

Since the period we are examining begins in 2010, we need to incorporate details concerning the mayor who held office during that year, thereby being elected in the 2006 election. For this election, we managed to find the old contact directory created by the Ministry of the Interior. Although a lot of manual intervention was needed, mainly because the directory lacks a unique numeric identifier for the municipality, we managed to link the contact directory with the register of candidates and election results available from CZSO.

Table 4.1 summarises the sources employed and the corresponding count of municipalities for which the mayor and his political affiliation could be successfully identified.

Table 4.1: Sources of political data

Year of election	Source	No. Municipalities	Success rate
2018	Ministry of the Interior	6 136	98%
2014	Central Notification Register	5 987	95%
2010	e-PUSA	5 923	96%
2006	Ministry of the Interior	6 110	98%

### 4.1.3 Demography data

The last part of the data necessary for the analysis is general information about individual municipalities, especially demographic indicators. The CZSO provides an annually updated set of statistical data for the Territorial Analytical Documentation (UAP), the content of which is now defined in Annex 1 to Decree No.13/2018 Coll. amending Decree No.500/2006 Coll. Due to the amendment of the decree, the structure of the monitored indicators slightly changed. Some indicators were added, whereas others were deleted, and changes in the assignment of indicators to individual phenomena were made, which had to be taken into account in the data processing.

## 4.2 Data preparation

Based on the data availability, the political cycle analysis is conducted for 2010–2022. This means four election years, three pre-election years, and six non-election years are analysed.

There are 6 254 municipalities in the Czech Republic. Ten municipalities that were established after 2010 were excluded from the analysis. Due to its unique nature, the capital city of Prague, which simultaneously fulfils the role of a municipality and a region, is also excluded from the analysis. The panel data collection traces the progression of required variables across an extensive range of 6 243 municipalities throughout a thirteen-year timeframe. Consequently, the dataset encompasses a substantial total of 81 159 observations.

In order to merge individual datasets presented in Section 4.1, we need a unique identifier for each municipality. The presence of identifiers is particularly important because, in the Czech Republic, there exist 1 500 municipalities that do not have a unique name. For example, there are 14 municipalities called Nová Ves, 9 municipalities called Němčice, and 9 municipalities called Petrovice. In addition, some municipalities with the same name are located in the same region. While the budgetary data uses a municipality identification number (referred to as IČO), CZSO uses a municipality code for reporting purposes. The IČO numbers and the municipality codes were linked thanks to data provided by the Ministry of the Interior.

The Python programming language was used for data processing, among other reasons, because of the substantial volume of data under consideration, surpassing the practical limitations of MS Excel in terms of handling and processing extensive datasets.

### 4.2.1 Data adjustments

As the financial statement FIN 2-12 M introduced in Subsection 4.1.1 also includes the budget fulfilment of voluntary associations of municipalities and regional councils of cohesion, only municipalities were first filtered from the data.

Furthermore, some technical adjustments to the original data were needed. For example, in the case of negative expenditure values, the minus sign was placed after the numeric value in the original dataset.<sup>1</sup> In addition, consolidation was carried out at the municipal level. Consolidation means cleansing budgetary data by excluding money transfers between the municipality's current

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<sup>1</sup>The most frequent item with a negative value is item 5362 – tax payments to the state budget. This situation arises when the tax office refunds an excess payment of value-added tax to the municipality. The municipality receives the amount as an offsetting expense and enters it in 5362 as a negative value (The Decree on the budget composition No. 412/2021 Coll.). Negative values can also occur when there are overpayments for water, gas, or electricity services.

accounts or between the accounts and the treasury since they do not represent revenues or expenditures to another entity.

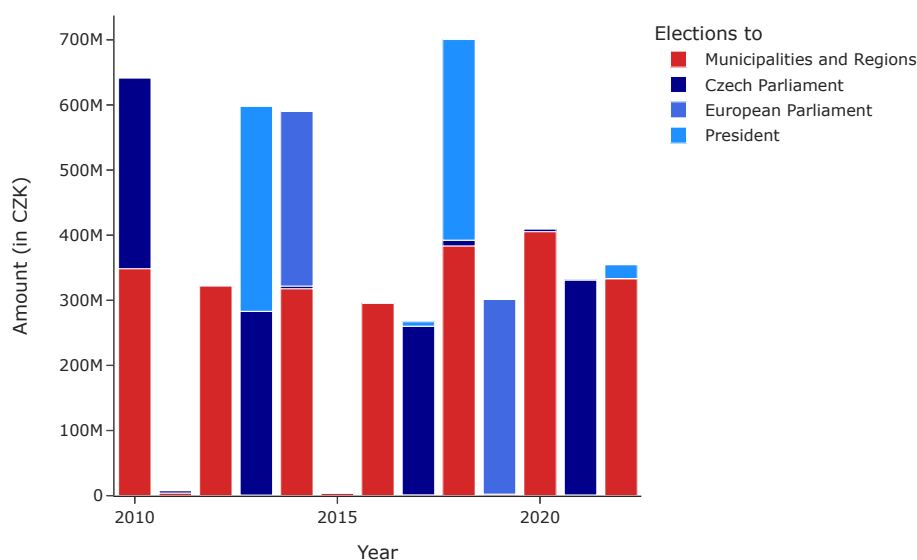
To ensure comparability across time, all financial data were adjusted for inflation using a base index. The inflation rate is expressed as the increase in the consumer price index relative to the base period in 2015 <sup>2</sup>.

Lastly, following Šťastná (2015) and Bendžiková (2018), administrative spending on elections has been excluded as it occurs unevenly only in election years and could artificially give the impression of a political cycle even though the municipality does not influence it. A graphical representation of election dates and associated costs is shown in Figure 4.1.

In Figure 4.2, we can see that the municipalities have a positive balance in the long term, the only exception being the first year when expenditure slightly exceeded revenue.

As already mentioned, expenditures are divided into two main categories - capital and current. The development of total expenditure in both categories over time is shown in Figure 4.3. In line with Subsection 3.2.2, we can see that the current expenditures surpass the capital expenditures by more than two-fold.

Figure 4.1: Election expenditures



<sup>2</sup>From now on, all figures and tables will be adjusted for inflation.

Figure 4.2: Development of total revenues and expenditures

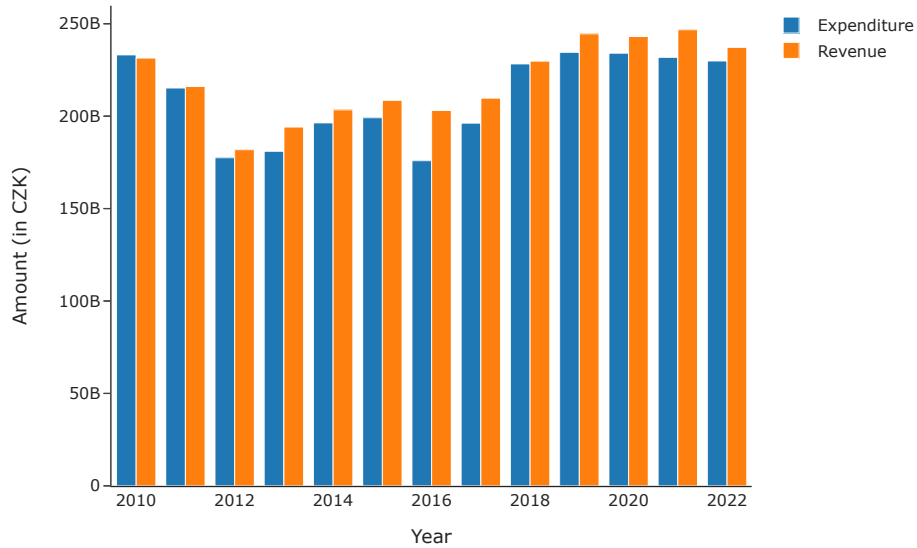
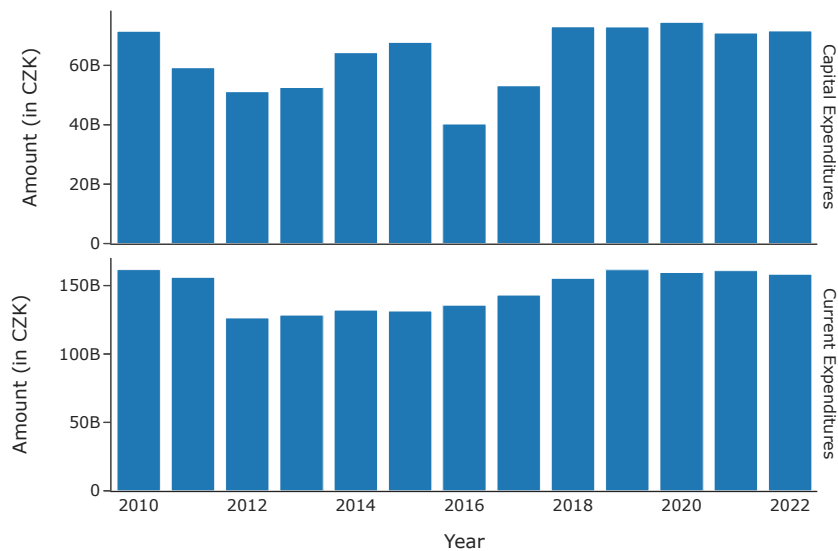


Figure 4.3: Development of total expenditures by class

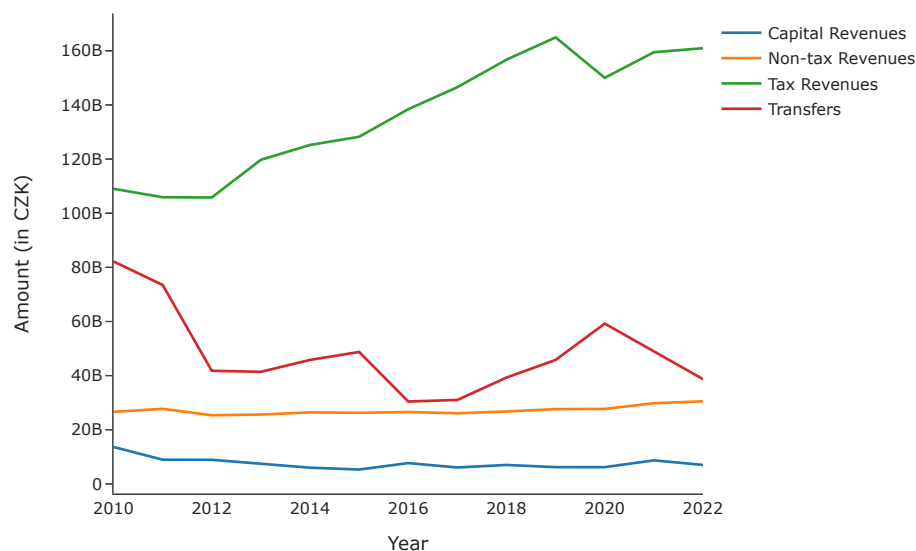


Taking a closer look at current expenditure, it can be noticed that after the first two years, there is a significant decline. This drop was caused by a social affairs and employment policy shift. Until 2011, municipalities with an extended scope of delegated competence were responsible for paying social

security benefits and support. Specifically, these included benefits for aid in material distress, benefits for persons with disabilities, and, most extensively, care allowances. To make the benefit payment system more efficient, the payments of all non-insured social benefits have been unified under the Labour Office since January 2012 (Act No. 73/2011 Coll.).

On the revenue side, the impact of the change in social benefit payments can be seen in the sharp decline in transfers between 2010 and 2012 (Figure 4.4).

Figure 4.4: Development of total revenues by class



We have decided to remove the revenue and expenditure associated with the payment of social benefits from the dataset as this is not a regular issue across the entire period and could distort the results.

Figure 4.5 shows expenditures by class, already net of social benefits. It is now easier to see that current expenditures are more stable over time, while capital expenditures are more variable. This is also because municipalities are much more independent in their decision-making on capital expenditures. As long as the investment is not grant-financed, the municipality retains complete autonomy in deciding on the realisation of a particular investment and its timing (Sedmíradská *et al.* 2011). Therefore, capital expenditures can be expected to be more often subject to the political budget cycle than current expenditures. However, we are also interested to know whether elected incumbents are prioritising capital expenditure at the expense of current expenditure.

Figure 4.6, on the other hand, shows the development of the revenue side of the budget, net of transfers for social benefits.

Figure 4.5: Development of expenditures by class net of social benefit

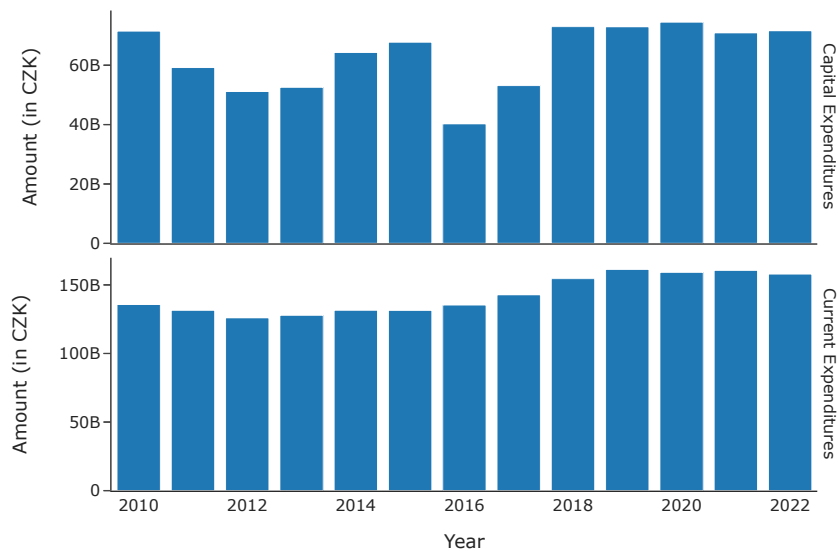
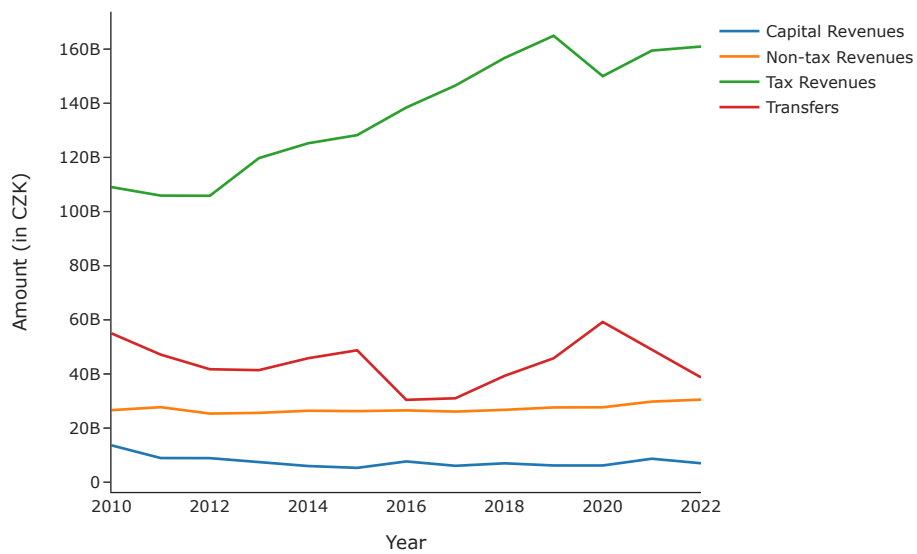


Figure 4.6: Development of revenues by class net of social benefit





### 4.3 Dependent variables

The dependent variables in the following models will be the individual fragments of the expenditure side of municipalities. Following for example Veiga & Veiga (2007), Sedmihradská *et al.* (2011), Šťastná (2015) or Bendžíková (2018) we will use the financial variables per capita. Applying per capita conversion will result in a more homogenous dataset, as it accounts for population size and helps mitigate the impact of varying budget sizes between large cities and small municipalities.

First, total municipal expenditures were divided into  $\text{curex}_{i,t}$  (current expenditures) and  $\text{capex}_{i,t}$  (capital expenditures) where  $i$  and  $t$  denote specific observation at a specific time. The expenditures were then divided into different groups based on the sectoral breakdown of the budget composition. In other words, expenditures were split based on the specific domain or field in which they were utilised. The granularity of breakdown on specific groups was mainly inspired by Šťastná (2015) and also reflects the analysis of the most common municipal expenditures from Chapter 3.2.2.

The first group of the sectoral breakdown of the budget composition “agriculture, forestry, and fishery” forms the first variable  $1\_agri_{i,t}$ . From the second group “industrial and other sectors of the economy” were selected two sections: transport  $22\_transp_{i,t}$  and water management  $23\_water_{i,t}$ . The third group “public services” represents almost half of the total expenditures (see Figure 3.2) and will therefore be the most disaggregated. Specifically, these are expenditures for education  $31\_32\_educ_{i,t}$ , culture  $33\_culture_{i,t}$ , sport and leisure activities  $34\_sport_{i,t}$ , housing, municipal services, and territorial development  $36\_housing_{i,t}$ , and environmental protection  $37\_env_{i,t}$ . The remaining sectors do not need to be further subdivided. These are “social affairs and employment policy”  $4\_social_{i,t}$ , “national security and legal protection”  $5\_safety_{i,t}$ , and “general public administration and services”  $6\_admin_{i,t}$ .

Table 4.2 presents the average capital and current expenditures in individual sectors’ election, pre-election, and non-election years<sup>3</sup>.

Overall, we can observe higher capital expenditures in election years compared to non-election years. On the other hand, there is a slight decrease in expenditures in pre-election years compared to non-election years. This could indicate a saving and an accumulation of funds for election years. Looking at

<sup>3</sup>Observations in non-election years amount to 37 458, in pre-election years they amount to 18 729 and in election years they amount to 24 972.

Table 4.2: Average expenditures per capita in election, pre-election, and non-election years

	Capital Expenditures			Current Expenditures		
	Non-election	Pre-election	Election	Non-election	Pre-election	Election
1_agri	30	30	27	193	196	190
22_transp	1 165	1 175	1 465	1 715	1 800	1 867
23_water	1 445	1 283	1 398	303	309	321
31_32_educ	903	825	936	1 646	1 574	1 600
33_culture	283	266	395	1 114	1 115	1 143
34_sport	542	487	752	695	715	715
36_housing	1 228	1 329	1 469	1 772	1 822	1 841
37_env	266	255	344	1 551	1 624	1 582
4_social	106	94	129	647	730	646
5_safety	158	206	179	585	639	599
6_admin	307	280	337	4 704	4 693	4 920
Other	127	98	135	220	233	220
Total	6 559	6 327	7 566	15 145	15 449	15 644

the individual sectors, the largest relative increases from non-election to election years occur in culture and sport (nearly 40% growth). In absolute terms, expenditures on transport and housing increased the most. Only agriculture and water management are experiencing a reduction in expenditures.

In the case of current expenditures, we can observe small increments in both pre-election and election years. Although, this is not such a significant increase compared to capital expenditures.

However, overall increases in spending in election years may not yet be indicative of a political cycle. They may simply be due to higher revenues in those years. As Table 4.3 suggests, average revenues per capita in election years are higher than in other years. This is caused by moderate year-on-year growth in tax revenues (see Figure 4.6), especially revenues from value-added tax, and the nature of the time series examined, which ends with an election year.

Table 4.3: Average revenues per capita in election, pre-election, and non-election years

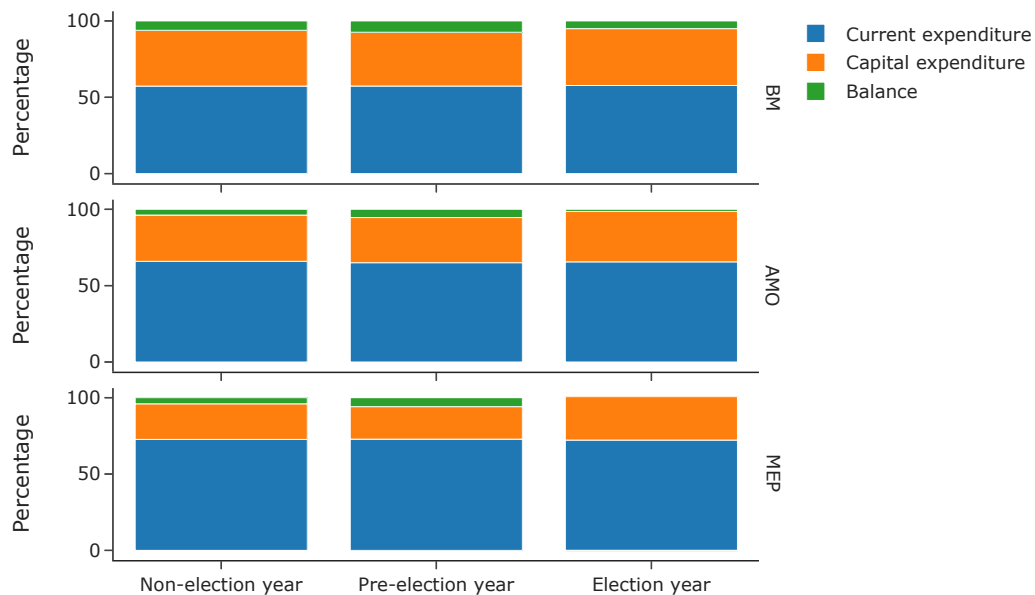
Non-election	Pre-election	Election
22 794	23 266	23 591

An alternative approach that might indicate whether there is manipulation of spending based on the timing of elections is to look at whether all revenues

received were utilised in the same year. In other words, we can focus on the balance that municipalities have in their budget closures.

Figure 4.7 depicts the financial management strategies of various types of municipalities in relation to the electoral cycle. Notably, municipalities endowed with expanded powers (MEP) exhibit a pattern where they maintain a budget surplus in non-election and pre-election years, while in election years, they exhaust their available revenues, resulting in a deficit. In election years, there is an observable escalation in the utilisation of revenue for capital expenditure, whereas current expenditure levels remain relatively constant over the years. An analogous pattern is evident among AMO<sup>4</sup> municipalities, however, it is noteworthy that there is no aggregate-level deficit in election years. On the other hand, basic municipalities (BM) exhibit relatively constant behaviour over time.

Figure 4.7: Percentage distribution of revenue based on type of municipality and type of year

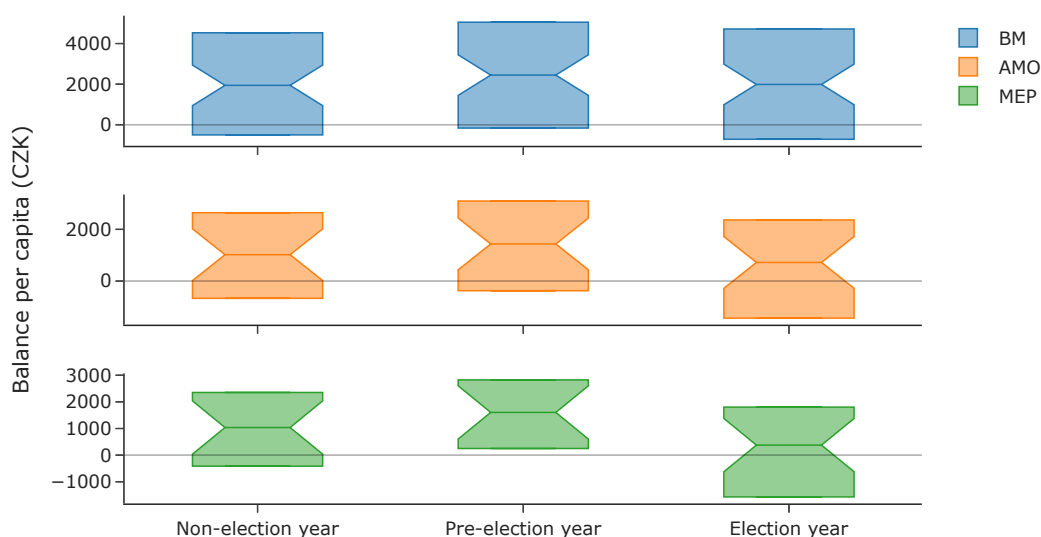


Since Figure 4.7 is derived from aggregated data encompassing all municipalities within a specific category, the outcomes might be skewed by a small

<sup>4</sup>Section 3.1 provides a categorisation of the municipalities, as elucidated through the visual representation in Figure 3.1.

number of municipalities with exceptional balances. Figure 4.8 therefore provides a more detailed view. The budget balance for each municipality in each year was computed as the disparity between total revenue and expenditure. Subsequently, a per capita value transformation was executed. Figure 4.8 shows the first quantile, median, and the third quantile of the respective distribution. The graphical representation of the distribution dispels the possibility of the previous results being distorted by outliers. For MEP, it is distinctly apparent that during election years, the likelihood of a municipality incurring a budget deficit is notably higher compared to other years.

Figure 4.8: Distribution of municipality budget balance per capita



From the data analysis conducted thus far, it is apparent that varying types of municipalities exhibit distinct patterns of behaviour. Elements of the political budget cycle can be expected in MEP municipalities. Conversely, establishing the existence of this phenomenon in BM municipalities is unlikely. The results of the remaining AMO group are unclear. Hence, a comprehensive econometric analysis will be essential to ascertain whether municipal spending is subject to manipulation on a term-to-term basis. For the reasons presented above, the

analysis will be conducted individually for each distinct category of municipalities. Tables 4.7, 4.8, 4.9 provide descriptive statistics of all dependent variables.

Table 4.4: Summary statistics: dependent variables (MEP)

		mean	std	min	max
curex		17.17	3.48	9.46	38.15
capex		6.45	4.47	0.27	63.23
1_agri	cur	0.13	0.24	-0.04	5.86
	cap	0.02	0.11	0.00	3.19
22_transp	cur	1.28	1.04	0.00	8.88
	cap	1.36	1.42	-0.27	18.97
23_water	cur	0.20	0.53	-2.36	12.83
	cap	0.73	2.23	0.00	62.82
31_32_educ	cur	1.79	0.49	0.87	8.27
	cap	0.89	1.42	0.00	20.25
33_culture	cur	1.35	0.57	0.28	7.00
	cap	0.39	1.11	-0.00	18.10
34_sport	cur	0.94	0.49	-0.69	3.75
	cap	0.76	1.54	-0.02	29.84
36_housing	cur	2.00	1.27	0.28	11.24
	cap	1.34	1.63	0.00	20.51
37_env	cur	1.46	0.62	0.00	8.55
	cap	0.25	0.83	0.00	26.16
4_social	cur	0.91	0.84	0.00	6.22
	cap	0.17	0.77	0.00	21.34
5_safety	cur	0.73	0.42	0.00	10.23
	cap	0.12	0.23	0.00	3.40
6_admin	cur	6.16	2.13	1.37	22.44
	cap	0.26	0.48	-2.16	8.00

Data on expenditures per capita in thousands CZK. Observations amount to 2 665.

Table 4.5: Summary statistics: dependent variables (AMO)

		mean	std	min	max
curex		14.89	4.35	1.69	44.54
capex		7.18	6.50	0.06	78.11
1_agri	cur	0.25	0.56	0.00	6.10
	cap	0.04	0.30	-0.02	7.27
22_transp	cur	0.86	0.84	0.00	10.70
	cap	1.33	1.81	0.00	22.65
23_water	cur	0.27	0.64	-5.63	13.82
	cap	1.32	4.29	0.00	73.93
31_32_educ	cur	1.90	0.66	0.76	9.47
	cap	1.07	2.45	0.00	51.97
33_culture	cur	1.20	0.87	0.04	16.32
	cap	0.40	1.52	-6.10	26.18
34_sport	cur	0.52	0.46	0.00	4.25
	cap	0.46	1.15	0.00	15.61
36_housing	cur	2.47	1.54	-0.19	11.91
	cap	1.61	2.47	0.00	32.18
37_env	cur	1.58	0.81	0.00	6.96
	cap	0.31	0.82	-0.03	9.48
4_social	cur	0.69	1.59	0.00	25.29
	cap	0.10	0.53	0.00	9.97
5_safety	cur	0.50	0.52	0.00	10.29
	cap	0.26	0.76	0.00	12.77
6_admin	cur	4.49	1.56	-5.39	18.67
	cap	0.20	0.65	0.00	14.01

Data on expenditures per capita in thousands CZK. Observations amount to 2 379.

Table 4.6: Summary statistics: dependent variables (BM)

		mean	std	min	max
curex		13.12	11.14	-64.36	1 898.00
capex		7.56	17.96	-2.60	1 946.25
1_agri	cur	0.61	2.50	-0.26	130.76
	cap	0.07	0.90	-0.07	73.58
22_transp	cur	1.14	3.30	-1.25	308.79
	cap	1.00	4.60	-2.32	595.80
23_water	cur	0.72	2.77	-18.68	554.43
	cap	2.70	12.13	-0.72	763.23
31_32_educ	cur	1.02	1.27	0.00	41.83
	cap	0.55	2.67	-0.17	147.11
33_culture	cur	0.64	0.99	-0.05	38.58
	cap	0.25	1.75	-0.29	110.92
34_sport	cur	0.26	0.58	-0.12	37.24
	cap	0.41	1.99	-0.06	133.87
36_housing	cur	1.47	2.11	-4.85	206.26
	cap	1.40	4.56	-4.63	287.81
37_env	cur	1.76	1.86	-0.20	203.32
	cap	0.33	2.34	-0.14	372.20
4_social	cur	0.12	0.89	-0.07	95.55
	cap	0.03	0.97	0.00	191.18
5_safety	cur	0.27	0.76	-0.13	96.52
	cap	0.25	1.57	-0.06	160.09
6_admin	cur	4.99	7.81	-70.96	1 804.13
	cap	0.52	8.46	-2.00	1 712.85

Data on expenditures per capita in thousands CZK. Observations amount to 76 115.

Tables with descriptive statistics can be utilised, among other purposes, to provide insights into the significantly higher level of heterogeneity expected among BM municipalities. Municipalities with a relatively small population, numbering only a few dozen inhabitants, have the capacity to report expenditures reaching several hundred thousand CZK per inhabitant, particularly in the context of larger-scale investments. An additional noteworthy illustration is found in the case of the municipality of Modrava, which reached the maximum values of total capital and current expenditures per capita, as indicated in Table 4.6 in 2010. Before 2015, a legislative provision existed that distributed a segment of personal income taxes to municipalities based on the residential locations of individuals (Act on budgetary determination of taxes No. 243/2000 Coll.). Thanks to the permanent residence of billionaire Zdeněk Bakala, Mod-

rava has received exceptionally substantial financial contributions, enabling it to allocate these funds for various expenditures. Due to Modrava being an exceptionally unusual outlier, it has been excluded from the analysis. Summary statistics for dependent variables in BM without Modrava are available in the appendix in Table A.1. It can be noted that the maximum values of `curex` and `capex` have now decreased by more than half.

## 4.4 Independent variables

The expenditures of individual municipalities are inherently most susceptible to the extent of their available revenues. Hence, we incorporate all four categories of municipal revenue in our analytical framework: tax revenues `tax_revi,t`, non-tax revenues `non_tax_revi,t`, capital revenues `cap_revi,t`, and transfers `transfersi,t`. However, municipalities can also utilise balances from previous fiscal years in addition to their present revenues. Variable `short_term_asseti,t` represents net short-term financial assets of municipalities left over from the previous year. As with the dependent variables, all financial variables are calculated on a per capita basis.

Additional explanatory variables employed encompass variables that signify the demographic composition of municipalities. In this category, we include population density `densityi,t` expressed as population per square kilometre of the territory of the municipality. Furthermore, the age structure of the population is taken into account, which can have a significant impact on the sectors in which municipalities invest. The variable `young_pcti,t` denotes the proportion of the population aged 0-14 in the total population, while the variable `old_pcti,t` represents the proportion of the population aged 65 and over.

The variable `unemploymenti,t`, which denotes the proportion of unemployed individuals, aids in illustrating the distinct macroeconomic circumstances of individual municipalities.

The next set of variables focuses on the political situation in the municipality. In addition to political parties, independent candidates or their associations can also run in municipal elections. In contrast to conventional political parties, which are obligated to seek registration with the Ministry of the Interior, independent candidates or local parties are not subjected to such a registration requirement. They are only required to attach a petition signed by voters supporting their candidacy to the list of candidates. Especially for smaller municipalities, the dominance of independent candidates is typical. It can be



posited that independent candidates have relatively lower personal political aspirations and are more oriented towards maximising social welfare. The variable  $\text{trad\_party}_{i,t}$  indicates whether the incumbent mayor is affiliated with one of the traditional political parties. For the purposes of this thesis, traditional parties are considered to be KSČM, ČSSD, ODS, KDU-ČSL, ANO, TOP 09 and Piráti. The explanatory variables  $\text{right}_{i,t}$  and  $\text{left}_{i,t}$  illustrate the ideological orientation of the incumbent mayor. The Communist Party of Bohemia and Moravia (KSČM) and the Czech Social Democratic Party (ČSSD) are considered left-oriented political parties, while the Civic Democratic Party (ODS) is considered a right-oriented party. The remaining traditional political parties are less distinct in their programs and can be considered center-oriented using the variable  $\text{centre}_{i,t}$ .

The last group of explanatory variables includes variables  $\text{election\_year}_{i,t}$  and  $\text{pre\_election\_year}_{i,t}$ . The first one is a dummy variable that takes the value 1 in election years and 0 in other years. The incorporation of this variable allows us to examine the hypothesis that expenditures tend to rise in election years. The second one is a dummy variable that takes the value 1 in the year immediately preceding elections and 0 for other years. By applying this variable, we can test whether expenditures grow even in the pre-election years or if there is a reduction in spending as a strategy to accumulate funds for the subsequent election year.

The descriptive statistics of all the explanatory variables used are summarised in Tables 4.7, 4.8, 4.9.

Table 4.7: Summary statistics: independent variables (MEP)

	mean	std	min	max	obs	n	t
tax_rev*	14.44	2.80	8.77	33.56	2 665	205	13
non_tax_rev*	3.30	2.15	0.35	19.23	2 665	205	13
cap_rev*	0.85	1.19	0.00	21.74	2 665	205	13
transfers*	5.73	3.41	1.12	50.71	2 665	205	13
short_term_asset*	7.44	5.11	-0.64	40.64	2 665	205	13
density	502.97	382.01	67.86	2 584.35	2 665	205	13
young_pct	14.90	1.27	11.44	21.20	2 665	205	13
old_pct	18.89	2.70	10.98	27.41	2 665	205	13
unemployment	6.39	3.49	0.92	21.18	2 665	205	13
trad_party	0.55	0.50	0.00	1.00	2 615	205	13
left	0.16	0.37	0.00	1.00	2 615	205	13
right	0.25	0.43	0.00	1.00	2 615	205	13
centre	0.14	0.35	0.00	1.00	2 615	205	13
election_year	0.31	0.46	0.00	1.00	2 665	205	13
pre_election_year	0.23	0.42	0.00	1.00	2 665	205	13

\*Data in thousands CZK per capita

Table 4.8: Summary statistics: independent variables (AMO)

	mean	std	min	max	obs	n	t
tax_rev*	13.72	3.30	7.49	37.44	2 379	183	13
non_tax_rev*	3.33	2.90	0.26	43.69	2 379	183	13
cap_rev*	0.84	1.35	-0.37	15.52	2 379	183	13
transfers*	4.94	4.38	0.73	55.80	2 379	183	13
short_term_asset*	7.99	7.29	-0.09	79.30	2 378	183	13
density	201.56	194.59	13.29	1 240.68	2 379	183	13
young_pct	15.28	1.79	11.17	25.16	2 379	183	13
old_pct	18.32	3.19	6.64	27.72	2 379	183	13
unemployment	6.53	4.03	0.21	22.79	2 379	183	13
trad_party	0.37	0.48	0.00	1.00	2 353	183	13
left	0.13	0.34	0.00	1.00	2 353	183	13
right	0.14	0.35	0.00	1.00	2 353	183	13
centre	0.10	0.30	0.00	1.00	2 353	183	13
election_year	0.31	0.46	0.00	1.00	2 379	183	13
pre_election_year	0.23	0.42	0.00	1.00	2 379	183	13

\*Data in thousands CZK per capita

Table 4.9: Summary statistics: independent variables (BM)

	mean	std	min	max	obs	n	t
tax_rev*	13.46	6.31	0.00	350.13	76 115	5 855	13
non_tax_rev*	3.01	6.05	-3.26	393.99	76 115	5 855	13
cap_rev*	0.85	6.68	-0.59	1 294.97	76 115	5 855	13
transfers*	5.07	11.50	-1.68	640.45	76 115	5 855	13
short_term_asset*	15.87	77.95	-7.07	17 703.41	76 095	5 855	13
density	75.27	90.80	0.67	2 195.81	76 115	5 855	13
young_pct	15.63	3.34	0.00	45.57	76 115	5 855	13
old_pct	17.86	4.65	0.00	80.00	76 115	5 855	13
unemployment	6.74	5.14	0.00	85.71	76 115	5 855	13
trad_party	0.14	0.34	0.00	1.00	73 254	5 855	13
left	0.05	0.22	0.00	1.00	73 254	5 855	13
right	0.03	0.17	0.00	1.00	73 254	5 855	13
centre	0.06	0.23	0.00	1.00	73 254	5 855	13
election_year	0.31	0.46	0.00	1.00	76 115	5 855	13
pre_election_year	0.23	0.42	0.00	1.00	76 115	5 855	13

\*Data in thousands CZK per capita

# Chapter 5

## Methodology

The main aim of the thesis is to investigate the impact of the election cycle on the structure of municipal spending. The analysis deals with a cross-municipality dataset consisting of several time periods and therefore is working with panel data. The fundamental structure of the examined model is represented by the notation:

$$\begin{aligned} y_{i,t} = & \alpha + \beta_1 \text{tax\_rev}_{i,t} + \beta_2 \text{non\_tax\_rev}_{i,t} + \beta_3 \text{cap\_rev}_{i,t} \\ & + \beta_4 \text{transfers}_{i,t} + \beta_5 \text{short\_term\_asset}_{i,t} + \beta_6 \text{density}_{i,t} \\ & + \beta_7 \text{young\_pct}_{i,t} + \beta_8 \text{old\_pct}_{i,t} + \beta_8 \text{unemployment}_{i,t} \\ & + \beta_9 \text{election\_year}_{i,t} + \beta_{10} \text{pre\_election\_year}_{i,t} + u_{i,t} \end{aligned} \quad (5.1)$$

For each model,  $y_{i,t}$  is replaced by a specific dependent variable introduced in Section 4.3.

The most elementary method applicable to our analysis is Pooled Ordinary Least Squares (OLS). The basic idea is to treat the panel data as a large cross-sectional dataset and estimate a traditional OLS regression. Pooled OLS assumes that all observations are independent, which can be a critical issue in panel data where there's a high likelihood of correlation among observations within the same individual across different time periods. By pooling the data and treating all observations equally, important individual-specific characteristics are not accounted for, leading to biased estimations. In other words, pooled OLS is not able to account for unobserved individual-specific effects. In the presence of unobserved individual effects that are correlated with other explanatory variables, the pooled OLS estimator is biased and inconsistent. In the case of unobserved individual effects that are uncorrelated with other explanatory variables, the OLS estimator is inefficient (Wooldridge 2013, p.460-493).

## 5.1 Unobserved effect models

The basic unobserved effect model can be written as

$$y_{i,t} = \beta_0 + \beta_1 x_{i,t,1} + \cdots + \beta_k x_{i,t,k} + c_i + \varepsilon_{i,t} \quad (5.2)$$

where  $x_{i,t,k}$  are observable variables that change across  $t$ ,  $i$ , or both.  $c_i$  is a time-constant individual effect. It captures the unobserved entity-specific heterogeneity that is constant across time periods, such as individual abilities, firm-specific characteristics, or country-specific factors. In the case of Czech municipalities, individual effects can be thought of as the geographical location of the municipality, distance and dependence on surrounding towns, affiliation to the region, or orientation to individual types of economic activity. The  $\varepsilon_{i,t}$  are called idiosyncratic errors because these change across  $t$  as well as across  $i$  (Wooldridge 2002).

The most common models designed to address unobserved individual effects in panel data analysis are Fixed Effects (FE) and Random Effects (RE) models. The critical consideration in addressing  $c_i$  lies in determining whether it is correlated with the observed explanatory variables  $x_{i,t,k}$ . In situations where  $Cov(c_i, x_{i,t,k}) \neq 0$ , it is appropriate to employ a FE model. Conversely, when  $Cov(c_i, x_{i,t,k}) = 0$ , a RE model is deemed suitable.

The Hausman test is designed to formally differentiate which of these estimators is better. The null hypothesis states that coefficients estimated by the efficient RE estimator are equal to those estimated by the consistent FE estimator. Therefore, RE is preferred if the null hypothesis is not rejected. On the other hand, the rejection of this hypothesis implies that only the FE estimator is consistent.

The Hausman test results for the six fundamental models are presented in Table 5.1. In all cases, the null hypothesis is rejected at a significance level of 0.05, signifying that only the FE model is consistent and should be employed.

Table 5.1: Hausman test results

	MEP	AMO	BM
<b>curex</b>	$\chi^2 = 111.016$ (p-value = 0.000)	$\chi^2 = 77.119$ (p-value = 0.000)	$\chi^2 = 169.095$ (p-value = 0.000)
<b>capex</b>	$\chi^2 = 145.937$ (p-value = 0.000)	$\chi^2 = 56.047$ (p-value = 0.000)	$\chi^2 = 51.423$ (p-value = 0.000)

We will assume that the FE model constitutes the most suitable approach, even in instances where dependent variables represent individual sectors within the budget composition.

### 5.1.1 Fixed effect models

The conventional perspective of the fixed effects approach involves treating the unobserved effect, represented by  $c_i$ , as a parameter to be estimated for each  $i$ . This estimation can be achieved by incorporating a dummy variable for each individual, along with the explanatory variables. However, the dummy variable regression is not very practical for panel data sets with many cross-sectional observations.

A more suitable method to eliminate the individual effect  $c_i$  is the fixed effects transformation, also called the within transformation. It lies in subtracting the entity-specific mean from each variable. This allows for the isolation of the time-varying components and facilitates the identification of relationships net of individual effects. From the Equation 5.2, we will subtract the Equation 5.3, resulting in the Equation 5.4.

$$\bar{y}_{i,t} = \frac{1}{T} \sum_{t=1}^T y_{i,t} = \beta_0 + \beta_1 \bar{x}_{i,t,1} + \cdots + \beta_k \bar{x}_{i,t,k} + c_i + \bar{\varepsilon}_{i,t} \quad (5.3)$$

$$\ddot{y}_{i,t} = y_{i,t} - \bar{y}_i = \beta_1 \ddot{x}_{i,t,1} + \cdots + \beta_k \ddot{x}_{i,t,k} + \ddot{\varepsilon}_{i,t} \quad (5.4)$$

The crucial aspect is that Equation 5.4 does not encompass the individual effect  $c_i$ . This suggests that we should estimate Equation 5.4 by pooled OLS. A pooled OLS estimator that is based on the time-demeaned variables is called the fixed effects estimator. Any time constant explanatory variables are removed along with  $c_i$  (Wooldridge 2013).

In order to receive the correct estimated variances of the regression coefficients, leading to reliable hypothesis testing, the assumptions of no serial correlation and homoskedasticity need to be tested. Serial correlation, also called autocorrelation, refers to the correlation between error terms across time, while heteroskedasticity denotes the presence of non-constant variance in the error terms. Robust statistical tests are essential to diagnose and address these issues in panel data models.

We use Wooldridge (2002) test for serial correlation incorporated in R software, which is suitable for short time series (Croissant & Millo 2008). The null hypothesis is that there is no serial correlation in the errors. According to the results presented in Table 5.2, we can reject the null hypothesis of zero correlation at a 0.05 significance level in five of the six models.

Table 5.2: Results of Wooldridge's test for serial correlation

	MEP	AMO	BM
<b>curex</b>	$F = 253.147$ (p-value = 0.000)	$F = 79.452$ (p-value = 0.000)	$F = 87.250$ (p-value = 0.000)
<b>capex</b>	$F = 28.495$ (p-value = 0.000)	$F = 6.226$ (p-value = 0.013)	$F = 0.955$ (p-value = 0.328)

Heteroskedasticity violates the assumption of constant variance of the error terms across entities and time periods. The presence of heteroskedasticity, although not inducing bias or inconsistency in the estimated coefficients ( $\hat{\beta}_j$ ), does invalidate the usual standard errors,  $t$  statistics, and  $F$  statistics (Wooldridge 2013). Results of the Breusch-Pagan test are presented in Table 5.3. We can reject the null hypothesis of homoskedasticity in all cases.

Table 5.3: Results of Breusch-Pagan test for Heteroskedasticity

	MEP	AMO	BM
<b>curex</b>	$BP = 428.749$ (p-value = 0.000)	$BP = 654.479$ (p-value = 0.000)	$BP = 1\ 689.340$ (p-value = 0.000)
<b>capex</b>	$BP = 455.426$ (p-value = 0.000)	$BP = 611.522$ (p-value = 0.000)	$BP = 10\ 839.874$ (p-value = 0.000)

Since the tests lead to the rejection of the null hypotheses indicating the presence of both heteroskedasticity and serial correlation, we will use heteroskedasticity and autocorrelation consistent (HAC) standard errors.

# Chapter 6

## Results

In this chapter, we will present and discuss the results of Fixed Effect estimation adjusted for autocorrelation and heteroskedasticity. At first, we will focus on the results of total current and capital expenditures. Next, we will have a closer look at the political variables. Last but not least, we will analyse the detailed structure of expenditure composition.

### 6.1 Total current and capital expenditures

Based on the preliminary analysis available in Section 4.3 we expect an increase in capital expenditures in election years, especially for municipalities with extended powers (MEP). Table 6.1, which presents results for capital expenditures, confirms this assumption. Generally, municipalities under the MEP category exhibit an increase in capital spending by CZK 900 per capita during election years. Likewise, AMO municipalities demonstrate an expenditure increase of CZK 464 per capita in election years compared to non-election years. Conversely, there is no significant pre-election year effect for MEP and AMO.

For BM municipalities distinctive outcomes are noted. Increases in capital expenditure occur in both pre-election and election years. In election years, BM municipalities spend CZK 176 more per capita, and in pre-election years even CZK 450 more than in non-election years.

The estimation results for total current expenditures are presented in Table 6.2. A negative relationship between *capex* and *curex* is evident, indicating the incumbent's tendency to achieve savings in current expenditures in favour of promoting capital expenditures just before elections. Municipalities spend CZK 279 less per capita in pre-election years in the case of MEP and CZK 333



Table 6.1: Estimation results for total capital expenditures

	MEP	AMO	BM
tax_rev	0.434 ***	0.267 **	0.191 ***
non_tax_rev	0.255 **	0.256 **	-0.017
cap_rev	0.467 ***	0.411 ***	0.365 ***
transfers	1.002 ***	1.067 ***	0.939 ***
short_term_asset	0.213 ***	0.265 ***	0.003
density	4.124	9.026	3.074
young_pct	-283.422 *	-286.197	59.924 *
old_pct	-305.514 ***	-300.948 **	39.549
unemployment	67.104	-45.366	-61.175 ***
election_year	900.272 ***	464.083 **	175.594 **
pre_election_year	-80.366	208.339	450.471 ***
$R^2$	0.557	0.521	0.551
Observations	2 665	2 378	76 082

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

less in the case of AMO. BM municipalities once again deviate slightly from the observed pattern. In pre-election years, they also economize, specifically by reducing current spending, amounting to CZK 183 per capita. In election years, however, we observe a significant increase in current expenditure.

Table 6.2: Estimation results for total current expenditures

	MEP	AMO	BM
tax_rev	0.421 ***	0.316 ***	0.243 ***
non_tax_rev	0.511 ***	0.385 ***	0.493 ***
cap_rev	0.194 ***	0.083	0.066 ***
transfers	0.139 ***	0.063	0.138 ***
short_term_asset	0.029 *	0.023	0.001
density	-1.274	-5.382	-10.639 ***
young_pct	7.104	104.453	-17.127
old_pct	103.575 **	266.846 ***	128.611 ***
unemployment	-132.163 ***	-69.635	-66.917 ***
election_year	8.637	117.067	190.829 ***
pre_election_year	-279.102 ***	-332.513 ***	-183.327 ***
$R^2$	0.645	0.493	0.200
Observations	2 665	2 378	76 082

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.1.1 The effect of political affiliation

In this section, our attention is directed towards examining the impact of political variables. First, we add the variable `trad_party` to the model and its interaction terms with the variables `election_year` and `pre_election_year`.

The interaction terms are important since the crucial question is not whether affiliation to a traditional political party affects the average level of spending, but whether it causes expenditure manipulation. In other words, do elected representatives exhibit various spending patterns at different stages of the election cycle?

The incorporation of interaction terms changes the interpretation of the `election_year` and `pre_election_year` coefficients. They are now clarifying the impact of a given type of year specifically for candidates who are not members of traditional political parties. The effects of `trad_party` conditional on `election_year` and `pre_election_year` were calculated as a sum of relevant coefficients and added to the tables with results.

Table 6.3 shows the estimation results for capital expenditures. From the previous Section 6.1, we know that MEP and AMO municipalities increase their capital spending in election years. Nevertheless, there is no significant difference between the spending of traditional and non-traditional parties in election years. In the case of BM municipalities, we can observe that in election years, traditional parties have significantly lower capital expenditures per capita than non-traditional parties. However, it is worth mentioning that traditional parties exhibit lower spending per capita even in non-election years.

For capital expenditures, we observed a significant pre-election year effect only for BM municipalities. However, this effect has not been shown to be explained by the division of elected representatives into traditional and non-traditional parties since there is no significant difference between them.

For current expenditures, we found that municipalities tend to cut spending in the pre-election year and likely save it for the upcoming election. Table 6.4 summarises the results for current expenditures with the division into traditional and non-traditional parties. In the case of MEP and AMO municipalities, we can observe that traditional parties spend less in pre-election years than non-traditional parties. This observation suggests that representatives affiliated with traditional parties, possessing stronger political backgrounds, may engage in more pronounced manipulation of the municipal budget.

Generally, BM municipalities also tend to economise current expenditures in pre-election years and then increase their spending in election years, but in neither case was there a significant difference observed between traditional and non-traditional parties.

Table 6.3: Estimation results for total capital expenditures with the effect of an affiliation to a traditional party

	MEP	AMO	BM
tax_rev	0.428 ***	0.274 **	0.179 ***
non_tax_rev	0.222 *	0.259 **	-0.018
cap_rev	0.480 ***	0.409 ***	0.373 ***
transfers	1.002 ***	1.066 ***	0.934 ***
short_term_asset	0.225 ***	0.264 ***	0.010
density	3.997	8.058	2.304
young_pct	-250.825	-265.406	70.048 **
old_pct	-308.274 ***	-302.490 **	32.756
unemployment	74.735	-45.628	-53.712 ***
election_year	869.586 ***	407.865 *	162.078 *
pre_election_year	-122.919	179.175	435.890 ***
trad_party	-84.494	150.650	-450.933 **
ele_year*trad_party	49.487	84.933	42.547
pre_ele_year*trad_party	48.779	76.771	168.263
trad_party ele_year	-35.007	235.583	-408.387 *
trad_party pre_ele_year	-35.716	227.421	-282.670
$R^2$	0.559	0.519	0.548
Observations	2 615	2 352	73 223

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 6.4: Estimation results for total current expenditures with the effect of an affiliation to a traditional party

	MEP	AMO	BM
tax_rev	0.413 ***	0.310 ***	0.233 ***
non_tax_rev	0.511 ***	0.383 ***	0.493 ***
cap_rev	0.185 ***	0.082	0.060 ***
transfers	0.137 ***	0.065	0.138 ***
short_term_asset	0.024	0.024	0.003
density	-1.216	-5.521	-10.349 ***
young_pct	-7.563	112.489	-25.909
old_pct	96.179 *	261.095 ***	135.276 ***
unemployment	-145.854 ***	-69.032	-72.449 ***
election_year	-25.486	160.804	194.060 ***
pre_election_year	-202.741 **	-212.526 **	-186.781 ***
trad_party	-142.354	-175.326	14.150
ele_year*trad_party	61.902	-34.218	-50.975
pre_ele_year*trad_party	-133.187	-282.176 *	24.026
trad_party ele_year	-80.452	-209.544	-36.825
trad_party pre_ele_year	-275.540 *	-457.502 *	38.175
$R^2$	0.648	0.491	0.202
Observations	2 615	2 352	73 223

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In the second part of the examination of political variables, we use the `left`, `right`, and `centre` variables instead of the `trad_party` variable to represent the political orientation of the political party. The interaction terms were also added to the model and the conditional effects were calculated to contribute to the interpretation of whether individual political orientations exhibit different behaviour in election years compared to the non-traditional parties that form the base of the model.

Table 6.5: Estimation results for total capital expenditures with the effect of political orientation

	MEP	AMO	BM
<code>tax_rev</code>	0.430 ***	0.271 **	0.179 ***
<code>non_tax_rev</code>	0.227 *	0.261 **	-0.018
<code>cap_rev</code>	0.481 ***	0.412 ***	0.373 ***
<code>transfers</code>	1.005 ***	1.067 ***	0.934 ***
<code>short_term_asset</code>	0.224 ***	0.268 ***	0.010
<code>density</code>	3.153	8.118	2.327
<code>young_pct</code>	-261.673	-266.588	70.274 **
<code>old_pct</code>	-304.364 ***	-300.083 **	33.345
<code>unemployment</code>	69.460	-47.301	-53.874 ***
<code>election_year</code>	862.000 ***	405.741 *	161.403 *
<code>pre_election_year</code>	-126.432	176.248	435.088 ***
<code>centre</code>	-403.529	-475.649	-925.434 ***
<code>left</code>	170.396	543.083	-235.590
<code>right</code>	19.028	197.577	39.793
<code>ele_year*centre</code>	289.195	27.447	303.361
<code>pre_ele_year*centre</code>	145.438	482.160	781.957 *
<code>ele_year*left</code>	251.260	138.712	167.809
<code>pre_ele_year*left</code>	157.980	3.234	-137.905
<code>ele_year*right</code>	-175.680	77.528	-639.622 *
<code>pre_ele_year*right</code>	-105.538	-161.100	-465.781
<code>centre election_year</code>	-114.334	-448.202	-622.073 *
<code>centre pre_election_year</code>	-258.090	6.511	-143.477
<code>left election_year</code>	421.656	681.795	-67.781
<code>left pre_election_year</code>	328.376	546.317	-373.495
<code>right election_year</code>	-156.652	275.105	-599.829 *
<code>right pre_election_year</code>	-86.510	36.477	-425.989
$R^2$	0.560	0.519	0.548
Observations	2 615	2 352	73 223

Note: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

From Table 6.5 we can see that the results for MEP, AMO, and capital expenditures are in line with the previous findings. Since there was no statistically significant difference between traditional and non-traditional parties in election years, we also expected no difference between left, right, centre, and non-traditional parties, which was confirmed by the model. In the case of

BM, we have observed that traditional parties spend less in election years than non-traditional parties. It is now evident that this discrepancy is attributed to right-wing and center-leaning parties. No discernible difference is observed between left-leaning parties and non-traditional parties.

Lastly, we examine the influence of policy orientation on current spending. The results are presented in Table 6.6. We have found out that in MEP and AMO in pre-election years traditional parties save more than non-traditional parties. In the case of MEP, left and right parties save more in pre-election years than non-traditional parties, while for AMO only right-wing parties spend less than non-traditional parties. For BM no statistically significant differences were found.

Table 6.6: Estimation results for total current expenditures with the effect of political orientation

	MEP	AMO	BM
tax_rev	0.416 ***	0.312 ***	0.233 ***
non_tax_rev	0.508 ***	0.381 ***	0.493 ***
cap_rev	0.183 ***	0.081	0.060 ***
transfers	0.135 ***	0.065	0.138 ***
short_term_asset	0.024	0.023	0.003
density	-0.753	-5.477	-10.361 ***
young_pct	-0.361	111.443	-25.912
old_pct	92.639 *	258.790 ***	135.246 ***
unemployment	-142.904 ***	-68.735	-72.422 ***
election_year	-23.257	162.033	194.203 ***
pre_election_year	-202.379 **	-210.997 **	-186.613 ***
centre	-123.083	-94.151	120.945
left	-277.875	-199.178	-39.109
right	-77.486	-166.365	-97.087
ele_year*centre	105.759	110.965	-231.600
pre_ele_year*centre	143.190	-80.717	-5.186
ele_year*left	-28.313	-66.226	37.806
pre_ele_year*left	-165.188	-237.142	37.673
ele_year*right	58.763	-100.994	120.696
pre_ele_year*right	-298.623 **	-482.914 *	55.953
centre election_year	-17.324	16.815	-110.656
centre pre_election_year	20.107	-174.868	115.759
left election_year	-306.188	-265.404	-1.303
left pre_election_year	-443.063 **	-436.320	-1.437
right election_year	-18.723	-267.358	23.609
right pre_election_year	-376.109 *	-649.279 *	-41.134
$R^2$	0.649	0.491	0.202
Observations	2 615	2 352	73 223

Note: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

## 6.2 Expenditure groups

In the subsequent section, we will delve into the decomposition of individual expenditures into sectors. As we found in Chapter 6.1, the expenditure volume changes during the election cycle. In general, it can be asserted that capital expenditures exhibit a notable increase just before elections, while current expenditures experience a decline in the pre-election year. Additionally, BM municipalities also report increased capital expenditures in pre-election years and increased current expenditures in election years. Examining municipal spending across sectors may provide insights into understanding these variations between types of municipalities. More importantly, the following analysis reveals which specific expenditures are subject to public budget manipulation and the opportunistic behaviour of elected representatives. The different sectors to be examined are defined in Section 4.3.

At first, our examination focuses on capital expenditures, which, owing to their investment nature and orientation toward municipal development, are anticipated to exhibit a greater likelihood of influenced timing in favour of politicians. The full results are available in Tables A.2, A.4, and A.6 in the appendix. To facilitate the interpretation of results, we employ graphical representations of the individual coefficient estimates. Figure 6.1 represents coefficient estimates for variables `election_year` and `pre_election_year` for 11 models differing in the dependent variable. If the p-value associated with the estimate is less than 0.1, its corresponding bar is displayed in red. Conversely, statistically insignificant results are shown in grey.

Across all municipalities, we can observe that the highest increase in spending in an election year occurs in the transport sector. For MEP and AMO, there is an augmentation of nearly CZK 300 per capita, whereas for BM, there is an increase of CZK 119. Other very significant increases in an election year can be observed in spending on culture, sport, and leisure activities. All these sectors can be considered as domains that are distinctly visible and recognizable to the voters.

For MEP and AMO, we further observe the effect of an election year on higher security spending. Interestingly, this sector is also the only one experiencing a rise in capital expenditure even in a pre-election year. In smaller municipalities, this could often involve supporting the activities of the volunteer fire brigade, which, for a group of voters, constitutes a hobby.

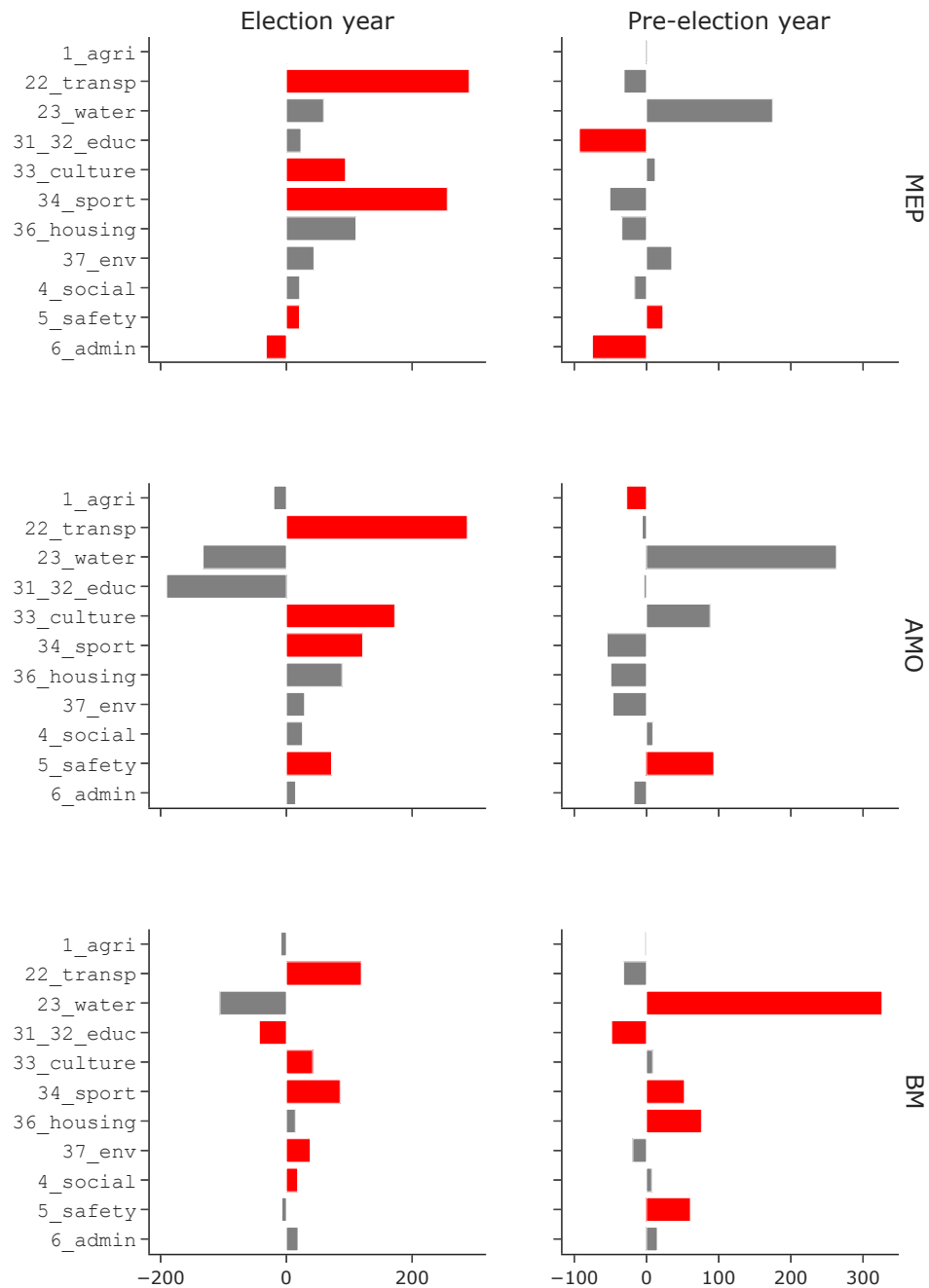


Figure 6.1: Estimation results for the sectoral breakdown of capital expenditure

As already mentioned, at the aggregate level of capital expenditure we observed an increase in the pre-election year only for BM. At the level of individual

sectors, it is evident that water management, in particular, is experiencing an increase. More specifically, during a pre-election year, there is an increase of CZK 326 per capita. However, there are also rises in sports and leisure activities, culture, and security.

Tables A.3, A.5, and A.7 in the appendix summarises estimated results for current expenditure. Figure 6.2 visually presents the results in the previously explained manner. At the aggregate level, we know that current expenditure is mainly characterized by a tendency to reduce spending in the pre-election year. The biggest decline across all types of municipalities can be observed in administration. MEP reduces its expenditure by CZK 284, AMO by CZK 172, and BM by CZK 147 per capita. Unsurprisingly, this is the domain where politicians find it most feasible to adjust the budget, given that it involves the costs of their own activities. Significant spending cuts are also occurring in the education sector, not only in the pre-election but also in the election year. Furthermore, in pre-election years there are often reductions in current spending on culture and sport.

At the aggregate level, we have observed increases in current expenditure in the election year only for BM. As with capital expenditure, the main sector driving this increase is transport, leading to an increase of CZK 290 per capita. Nevertheless, it is noteworthy that spending on transport is on the rise across nearly all categories. This leads us to infer that this is the most strategically targeted sector.



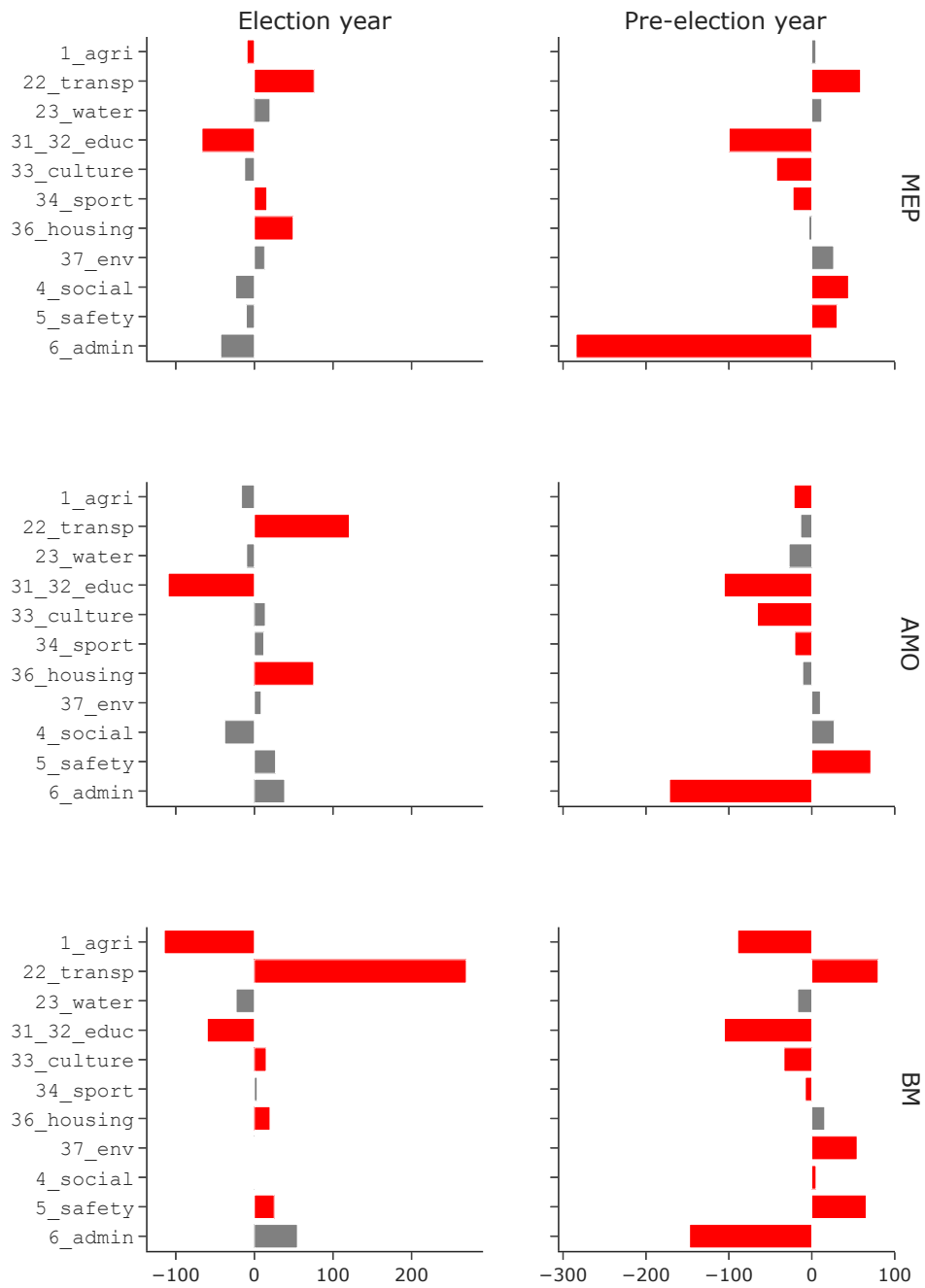


Figure 6.2: Estimation results for the sectoral breakdown of current expenditure

# Chapter 7

## Conclusion

This thesis aims to examine the political budget cycle of municipalities in the Czech Republic and determine whether and how politicians manipulate the public budget for re-election. The thesis follows up on previous studies that have focused on the political cycle in the Czech Republic at the level of 205 municipalities with extended powers. However, this study extends its examination of the political cycle to a significantly broader sample, encompassing all 6 254 municipalities within the Czech Republic between 2010 and 2022. The utilisation of more recent data affords the opportunity to validate and compare previously established findings for municipalities endowed with extended powers. More importantly, the thesis examines the behaviour of an extensive dataset of smaller municipalities, which has not yet been analysed in this context and range. Furthermore, this study provides a comparative analysis of different types of municipalities.

Using the fixed effect model with heteroskedasticity and autocorrelation robust standard errors, we can conclude that the political budget cycle is present in the Czech Republic at the municipal level. It is mainly reflected in capital spending growth just before the elections, which politicians use to demonstrate their competence. For municipalities with extended powers (MEP), we can observe that current expenditures are reduced in the period before elections with the intention of saving. Subsequently, the budget savings are allocated towards capital expenditures, which are deemed more appealing and visible to the voters. These results are in line with Sedmihradská *et al.* (2011) and Štastná (2015). The same pattern of behaviour is also observed in municipalities with an authorised municipal office (AMO). The remaining smaller municipalities, which we refer to as basic municipalities (BM), also initially reduce current

spending, but in the election year, they increase as much as capital spending. Moreover, the increase in capital expenditures occurs even earlier than for the remaining types of municipalities. In general, it can be summarised that MEP and AMO exhibit strikingly similar behaviour, whereas BM demonstrates minor variations.

In addition to changes in overall spending, politicians can also change the structure of expenditures and prioritise individual sectors in an effort to appeal to voters. Across all types of municipalities, there is an increase in capital expenditures, particularly on transport, culture, sport and leisure. On the other hand, the decrease in current expenditures is mainly in the area of administration. Significant current spending cuts are also occurring in the education sector.

The study also examined the impact of the political affiliation of the mayor of the municipality. Our findings indicate that for MEP and AMO, mayors affiliated with traditional parties exhibit a greater propensity to reduce current spending compared to independent or locally affiliated party candidates. However, our empirical results provide little evidence of ideological cycles overall. Conversely, it seems more plausible that elected representatives engage in opportunistic behaviour, adapting their economic decisions to gain political advantages within the electoral cycle. An interesting extension of the study could involve a comparison of full-time and half-time mayors for whom different motivators might be expected. Unfortunately, the necessary data for this purpose are not currently available.

Creating and compiling a database of elected mayors, including their political affiliations, can be considered a secondary contribution of this thesis.

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Vyhláška č. 412/2021 Sb., Vyhláška o rozpočtové skladbě

Zákon č. 367/1990 Sb., Zákon České národní rady o obcích (obecní zřízení)

Zákon č. 128/2000 Sb., Zákon o obcích (obecní zřízení)

Zákon č. 131/2000 Sb., Zákon o hlavním městě Praze

Zákon č. 243/2000 Sb., Zákon o rozpočtovém určení výnosů některých daní územním samosprávným celkům a některým státním fondům (zákon o rozpočtovém určení daní)

Zákon č. 250/2000 Sb., Zákon o rozpočtových pravidlech územních rozpočtů

Zákon č. 419/2001 Sb., Zákon o volbách do zastupitelstev obcí a o změně některých zákonů

Nařízení vlády č. 318/2017 Sb., Nařízení vlády o výši odměn členů zastupitelstev územních samosprávných celků

Zákon č. 73/2011 Sb., Zákon o Úřadu práce České republiky a o změně souvisejících zákonů

# Appendix A

## Appendix

Table A.1: Summary statistics: dependent variables (BM without Modrava)

		mean	std	min	max
curex		13.07	8.52	-64.36	644.79
capex		7.47	14.73	-2.60	763.25
1_agri	cur	0.61	2.50	-0.26	130.76
	cap	0.07	0.90	-0.07	73.58
22_transp	cur	1.14	3.30	-1.25	308.79
	cap	1.00	4.58	-2.32	595.80
23_water	cur	0.72	2.76	-18.68	554.43
	cap	2.69	12.03	-0.72	763.23
31_32_educ	cur	1.02	1.27	0.00	41.83
	cap	0.55	2.67	-0.17	147.11
33_culture	cur	0.64	0.99	-0.05	38.58
	cap	0.24	1.75	-0.29	110.92
34_sport	cur	0.26	0.57	-0.12	37.24
	cap	0.41	1.98	-0.06	133.87
36_housing	cur	1.46	1.84	-4.85	128.18
	cap	1.38	4.22	-4.63	263.23
37_env	cur	1.76	1.86	-0.20	203.32
	cap	0.33	1.87	-0.14	202.24
4_social	cur	0.12	0.89	-0.07	95.55
	cap	0.03	0.97	0.00	191.18
5_safety	cur	0.27	0.76	-0.13	96.52
	cap	0.24	1.46	-0.06	100.02
6_admin	cur	4.95	4.12	-70.96	612.91
	cap	0.46	2.48	-2.00	214.43

Data on expenditures per capita in thousands CZK. Observations amount to 76 102.



Table A.2: Estimation results for capital expenditures per sector in MEP

	1_agri	22_transp	23_water	31_32_educ	33_culture	34_sport	36_housing	37_env	4_social	5_safety	6_admin
tax_rev	0.002	0.127 ***	-0.064	0.136 ***	0.056 **	0.024	0.087 *	0.038 *	0.043	0.006	0.004
non_tax_rev	0.005 *	0.112 ***	0.190 *	-0.036	-0.066 *	-0.029	0.120 ***	-0.038 **	-0.009	0.000	0.022
cap_rev	0.002	0.055 *	0.209	0.031	0.000	0.014	0.152 ***	0.014	-0.028 ***	0.002	0.005
transfers	0.000	0.077 ***	0.346 ***	0.157 ***	0.101 ***	0.069 ***	0.070 ***	0.094 **	0.068 **	0.003	0.004
short_term_asset	-0.002	0.013	0.034 **	0.024 **	0.006	0.047 ***	0.071 ***	0.002	0.002	0.003	0.009 *
density	-0.061	1.307	-3.262	2.046	0.544	-0.002	3.782	-0.013	-0.307	0.079	0.567
young_pct	-4.412	-9.903	-110.381	29.315	-21.799	-68.137	-116.470 *	-15.985	-14.442	20.646 **	-28.882
old_pct	-7.934 **	-92.434 **	-36.308	-82.006 **	-42.282	-28.664	17.615	11.177	1.914	-13.173 ***	-17.535
unemployment	-6.897 ***	-41.333	13.705	23.374	19.613	-7.155	29.181	45.865 **	14.107	-7.771 **	-4.279
election_year	0.535	290.769 ***	59.113	23.165	93.950 **	255.764 ***	110.634	43.788	21.085	20.807 **	-32.037 *
pre_election_year	1.607	-31.034	174.599	-92.977 *	12.078	-50.725	-34.071	35.035	-16.325	22.760 *	-74.874 ***
$R^2$	0.012	0.094	0.231	0.129	0.074	0.038	0.097	0.104	0.068	0.022	0.014
Observations	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665

Note: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table A.3: Estimation results for current expenditures per sector in MEP

	1_agri	22_transp	23_water	31_32_educ	33_culture	34_sport	36_housing	37_env	4_social	5_safety	6_admin
tax_rev	-0.003	0.033 **	0.010	0.037 ***	0.043 ***	0.031 ***	0.006	0.027 **	0.007	0.014	0.198 ***
non_tax_rev	0.050	0.017	0.051 **	0.028 ***	-0.008	0.028 ***	0.081 ***	0.015	0.017	0.076	0.156 ***
cap_rev	0.000	0.003	-0.007	0.008	0.008 **	-0.009 **	0.059 ***	0.009	-0.001	-0.003	0.132 ***
transfers	-0.001	0.012	0.020	0.015 ***	0.009 ***	0.003 **	0.000	0.017 ***	0.036 ***	0.014 **	0.011
short_term_asset	-0.002	-0.002	-0.001	0.004	0.004	-0.004 *	0.006	0.003	-0.003	0.001	0.024 **
density	-0.193	-2.695 ***	-0.166	0.481	0.480	-0.549	0.686	0.036	-1.115	-1.120	3.012
young_pct	-5.584	50.027 **	-8.121	-40.063 **	-7.581	22.567	-12.164	-21.381	81.256 *	28.059 **	-95.750
old_pct	-4.108	-23.095	-14.923	-25.275 **	-5.904	19.716 **	-3.562	22.944 **	95.902 ***	8.946	42.963
unemployment	-1.345	-27.512 **	-5.837	-31.341 ***	-19.483 ***	1.833	-20.755 *	1.734	-45.593 ***	-4.021	23.199
election_year	-9.270 **	76.005 ***	19.838	-66.666 ***	-12.370	15.797 *	49.312 ***	13.059	-23.787	-10.241	-42.744
pre_election_year	4.894	58.751 ***	12.057	-99.693 ***	-42.466 ***	-22.600 ***	-3.447	26.371	44.357 ***	30.479 ***	-284.254 ***
$R^2$	0.098	0.140	0.035	0.158	0.264	0.248	0.078	0.114	0.469	0.179	0.321
Observations	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665	2 665

Note: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table A.4: Estimation results for capital expenditures per sector in AMO

	1_agri	22_transp	23_water	31_32_educ	33_culture	34_sport	36_housing	37_env	4_social	5_safety	6_admin
tax_rev	0.002	0.031	0.012	0.094	-0.033	0.054 **	0.076	-0.019	0.008	0.021	0.023 **
non_tax_rev	0.001	0.061	-0.089	0.038	0.018	-0.007	0.189 ***	0.018	0.001	0.022	0.005
cap_rev	-0.007 **	0.088 **	0.156 **	0.040	0.017	0.047 *	0.067 *	-0.013	-0.003	0.017	0.002
transfers	0.002 *	0.032	0.630 ***	0.137 ***	0.075 ***	0.022 **	0.117 ***	0.029 ***	0.006 **	0.012 **	0.006
short_term_asset	0.004	0.024	0.075 ***	0.087 ***	0.019 *	0.013	0.026	-0.004	0.006 *	0.012	-0.001
density	-0.317	3.456	-14.191	10.590	4.035	1.326	3.147	2.111	-0.692	0.119	0.032
young_pct	1.343	-68.928	-164.740	-67.299	-50.708	70.285	15.284	-19.391	-7.796	13.775	-12.767
old_pct	-8.993	29.986	-161.238	-66.005	-43.758	-48.727 *	12.858	26.770	2.831	-13.080	-36.147 **
unemployment	-1.696	-23.365	-14.571	63.733	-46.040 *	-8.155	-11.460	10.548	1.460	-3.983	-7.417
election_year	-19.930	287.695 ***	-132.414	-190.471	172.250 **	121.365 *	88.424	28.871	25.616	71.837 **	14.657
pre_election_year	-27.302 **	-5.858	263.099	-2.946	88.140	-54.376	-49.387	-46.417	8.793	93.340 **	-17.346
$R^2$	0.008	0.052	0.369	0.079	0.046	0.033	0.076	0.027	0.013	0.028	0.006
Observations	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378

Note: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table A.5: Estimation results for current expenditures per sector in AMO

	1_agri	22_transp	23_water	31_32_educ	33_culture	34_sport	36_housing	37_env	4_social	5_safety	6_admin
tax_rev	-0.005	0.039 ***	0.024	0.025	0.047 ***	0.009 *	0.006	0.019	0.015	0.002	0.133 ***
non_tax_rev	0.078 ***	0.033	0.059 ***	0.033 **	0.005	-0.005 *	0.099 *	0.015	0.009	0.014 *	0.041 ***
csp_rev	0.013 *	0.017	-0.016	0.002	0.006	-0.005 *	0.013	0.005	-0.051	-0.001	0.101 ***
transfers	0.002	0.006	-0.003	0.013 ***	-0.005	-0.002	0.008	0.006 **	0.062 **	0.012 **	-0.035 **
short_term_asset	0.008 *	0.001	0.000	0.002	-0.006	0.001	0.016	0.006	-0.006	0.000	0.001
density	0.427	1.722	0.332	1.817	0.315	-0.183	-0.220	-1.048	-6.622	-0.761	-0.902
young_pct	-3.979	-66.257 *	9.031	-4.503	-24.689	7.054	-9.852	12.543	98.904	37.228 ***	49.009
old_pct	13.274	-4.369	-5.932	-16.662	14.108	6.223	41.234	51.026 ***	104.431	-5.110	57.992 *
unemployment	-3.181	-3.732	0.211	-15.993 *	-3.415	-10.277 **	-21.523	-0.417	-1.924	-10.511	-2.174
election_year	-16.361	120.853 ***	-9.862	-109.573 ***	13.889	11.992	75.474 ***	8.559	-37.735	26.931	38.552
pre_election_year	-21.393 **	-13.311	-27.355	-105.584 ***	-65.582 ***	-20.486 **	-10.922	10.407	26.975	71.213 ***	-171.569 ***
R <sup>2</sup>	0.176	0.038	0.034	0.061	0.075	0.117	0.166	0.225	0.153	0.035	0.331
Observations	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378	2 378

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A.6: Estimation results for capital expenditures per sector in BM

	1_agri	22_transp	23_water	31_32_educ	33_culture	34_sport	36_housing	37_env	4_social	5_safety	6_admin
tax_rev	0.005 **	0.032 ***	0.028	0.016 **	-0.007	-0.005	0.087 ***	-0.003	0.001	0.015 ***	0.015
non_tax_rev	0.007	-0.009	-0.034	-0.002	0.003	0.003	0.016	-0.007	-0.002	0.000	0.011 **
cap_rev	0.001	0.066 **	0.129 ***	0.001	0.008	0.007 ***	0.124 ***	0.013	0.001	0.000	0.009
transfers	0.000	0.093 **	0.727 ***	0.029 ***	0.010 ***	0.007 ***	0.029 ***	0.013 ***	0.006	0.009 ***	0.009 ***
short_term_asset	0.000	0.000	0.001	0.000 ***	0.000	0.000	0.001	0.000	0.000	0.000	0.000
density	-0.601 *	4.010 **	-9.659 ***	5.243 **	0.306	1.754 **	0.762	0.263	-0.256	0.065	0.496
young_pct	5.484	-8.816	31.833	20.552 ***	6.213	11.173 **	-0.191	5.991	-7.035	5.697 *	-7.012
old_pct	3.165	37.526 **	-46.257	11.295 **	2.301	8.427	35.308 ***	1.860	-3.460	3.754	-11.984
unemployment	0.234	6.315	-29.267	-10.106 ***	0.642	-9.520 *	-10.128	-6.842 **	-2.759 *	-8.804 ***	6.634
election_year	-8.584	119.193 ***	-105.692	-43.035 ***	41.815 ***	85.451 ***	14.237	37.964 **	17.844 *	-7.178	18.503
pre_election_year	-1.589	-31.725	326.227 ***	-48.255 **	8.561	52.555 ***	76.209 *	-18.918	7.242	60.881 ***	14.994
$R^2$	0.002	0.059	0.454	0.018	0.005	0.003	0.029	0.008	0.005	0.010	0.003
Observations	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082

Note: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table A.7: Estimation results for current expenditures per sector in BM

	1_agri	22_transp	23_water	31_32_educ	33_culture	34_sport	36_housing	37_env	4_social	5_safety	6_admin
tax_rev	0.032 *	0.033 **	0.019 **	0.005 **	0.011 ***	0.009 **	0.029 ***	0.032 ***	0.002 *	0.003 *	0.058
non_tax_rev	0.313 ***	0.009	0.003	0.000	0.000	0.000	0.010 ***	0.001	0.000	0.005 **	0.145 ***
cap_rev	0.000	-0.011 *	-0.008	0.002 *	-0.001	0.000	0.024 ***	0.000	-0.001	0.001	0.060 ***
transfers	0.000	0.065 ***	0.056 *	0.001 ***	0.001 **	0.001	0.003 *	0.014 **	0.002	0.003 ***	-0.009 ***
short_term_asset	0.000	0.000	0.000	0.000 ***	0.000	0.000	0.000 *	0.000	0.000 **	0.000	0.000
density	-1.728 ***	-0.033	0.425	0.340	-0.298	0.440 **	-2.115 ***	0.581	-0.745 *	-0.046	-7.487 ***
young_pct	15.847	-35.099 ***	-16.190	9.864 ***	-2.923	-0.732	-3.658	7.296	3.409	-1.631	6.610
old_pct	-11.805	-17.191	42.431	-0.984	8.300 ***	2.191	15.400 ***	23.382 ***	2.067	-0.236	64.755 **
unemployment	-14.468 **	10.326	7.093	18.431 ***	-4.167 ***	-0.455	-8.845 ***	-22.675 ***	-3.040 *	0.444	-48.671 **
election_year	-114.618 ***	269.637 ***	-23.198	-59.883 ***	15.033 **	3.531	19.914 *	0.060	-0.806	25.265 ***	54.767
pre_election_year	-89.344 ***	79.991 ***	-17.030	-105.473 ***	-33.563 ***	-7.849 **	15.548	54.716 ***	5.077 ***	65.588 ***	-147.464 ***
$R^2$	0.423	0.053	0.056	0.020	0.007	0.007	0.020	0.035	0.004	0.005	0.061
Observations	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082	76 082

Note: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1