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Yardstick Competition in case of the Czech Property Tax[1]

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Abstract: Introduction of the local coefficient in the property tax law since 2009 gave a significant tax authority to Czech municipalities; on average they can up to quadruple their property tax revenue which means increasing their total revenue by more than 10%. Czech municipalities appeared very cautious when exercising this new autonomy and only less than 8% of them applied the local coefficient in 2013.

The theory of yardstick competition offers one of the possible explanations of this reluctance: Voters do not vote for politicians who increase taxes unless the politicians in the neighbouring jurisdictions increase taxes as well. So municipal politicians are carefully observing what others do and approve the local coefficient with prudence.

The purpose of this paper is to evaluate the usage of the local coefficient with special regard to spatial distribution and impacts on re-election and to verify the existence of the yardstick competition among Czech municipalities in case of the property tax.

The results of the difference of means test using data for 206 municipalities with extended scope comply with this theory: (1) politicians who applied local coefficient in 2010 got re-elected in a significantly lesser number of municipalities than those who did not, and (2) in all years analyzed, municipalities applying local coefficient are surrounded by a higher share of municipalities with local coefficient than municipalities without it.

Key words: tax autonomy, property tax, yardstick competition

JEL Classification: H71, H73

Introduction

Introduction of the local coefficient in the property tax law in 2009 gave a significant tax authority to Czech municipalities; on average they can up to quadruple their property tax revenue, which means increasing their total revenues by more than 10%. Czech municipalities appeared very cautious when exercising this new autonomy, and only less than 8% of them apply the local coefficient in 2013.

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The purpose of this paper is to evaluate the usage of the local coefficient with special regard to spatial distribution and impacts on re-election and to verify the existence of the yardstick competition among Czech municipalities in case of the property tax.

Using the difference of means test (t-test) and the data for the 206 municipalities with extended scope, we try to answer two research questions: (1) Are municipalities neighbouring with municipalities which apply or applied local coefficient more likely to introduce, keep, or abandon the local coefficient?, and (2) Did politicians who introduced the local coefficient get punished, i.e., were not re-elected in the 2010 municipal council election?

The first part of the paper explains the importance of tax autonomy and discusses the yardstick competition theory as a possible explanation for low utilization of the granted tax autonomy. The second part provides a brief overview of the property tax system in the Czech Republic and evaluates the usage of the local coefficient including its spatial distribution. In the third part, individual variables are defined together with the description of the data sources and the method applied. The last part presents obtained results and their discussion.

The importance and drawbacks of tax autonomy

Tax autonomy captures various aspects of the freedom that local governments have over their own taxes (Blöchliger and Rabesona, 2009, 3). It is a necessary condition for real fiscal decentralization, when local governments make decisions regarding the provision of public services, at the same time bearing a significant share of the associated costs through their own revenue base (Oates 1991, 263).

Decentralization was an essential part of the transition process from a command to a market economy, as the total size of the public sector had to be reduced and new local governments had to receive appropriate responsibilities and institutional capacity in order to be capable and accountable for their decisions (Bird, Freund and Wallich, 1994). Decentralization together with deconcentration and delegation were also parts of the recent public sector reforms which aimed to “move the process of governing out the centre of government” (Peters, 2009, 5).

Decentralization should improve (1) governance, i.e., local responsiveness, political participation and accountability, and (2) allocative efficiency. However, this is unlikely to happen unless local governments finance the services they provide either from user charges, or taxes born by their residents (Bird, 1993). A clear relationship between the services provided by a local government and its financing ensures that the right volume of the service is provided, and it makes the local government directly accountable to the citizens regarding its decisions. Establishment of this relationship needs significant tax autonomy; otherwise it is unlikely that the expected gains from decentralization will occur.

Local government own taxes are either local taxes, or shared taxes. Local tax is a tax for which the local government has some discretion regarding the tax base or tax rate (Bird, Freund and Wallich, 1994, 154-156), and it should have these features: immobile tax base; sufficient, stable and predictable tax yield; be reasonably fair or equitable; easy to administer; hard to export the tax burden to non-residents; and the tax base is visible to ensure accountability (Bird, Freund and Wallich, 1994, 214). None of the major taxes,

such as personal and corporate income tax, value added tax or excises, is an appropriate candidate for a local tax. Therefore, the property tax, exactly the real estate tax, remains the only potentially significant tax that can be assigned to local governments as a true local tax. Despite its assignment to municipalities, property tax in the Czech Republic meant only very limited tax autonomy until 2009, as is described in the next section.

Tax sharing is an arrangement when the tax revenue is divided vertically between central and local governments as well as horizontally across local governments (Blöchliger and King, 2006, 166) and it is able to generate large tax revenue for local governments (King, 2006, 130). Tax autonomy associated with the tax sharing differs significantly in different arrangements: (1) Local governments enjoy the highest tax autonomy in case of the "piggyback" tax sharing when local governments tax the same base as the central government, but may decide on their own tax rates. (2) If local governments are entitled to a given percentage of the tax revenue arising in their jurisdiction, they can influence their own tax revenues through promotion of economic activity within their jurisdiction. (3) In case local governments receive a share of nation-wide tax receipts based on a formula, they have no power to influence their revenues (Joumard and Kongsrud, 2003, 27). On average, the tax revenue share with full or partial discretion amounts to almost 70% for local governments in the OECD countries (Blöchliger and Rabesona, 2009, 4), but the tax autonomy varies widely, and it is very low in the case of the Czech Republic.

For local politicians, tax autonomy means freedom to set the tax rates. In a perfect world, tax rates match voters' preferences and allow financing of the preferred set of public services. In the real world, however, there is asymmetric information between voters and politicians, who know more about the costs of providing public services. At the same time, some politicians do rent-seeking, i.e., increase taxes in order to finance their whims at the expense of taxpayers (Besley and Case, 1995, 25). It is hard for voters to distinguish between good and bad politicians. Behaviour of politicians in the neighbouring local governments may give some clue: If the tax rates are growing everywhere, voters may be convinced about the necessity of it, i.e., evaluate the politician as good and re-elect him. The phenomena when politicians care what politicians from other jurisdictions are doing in order to get their votes is called yardstick competition (Besley and Case, 1995).

Strategic tax interaction between local governments or tax mimicking are very common and can be explained next to the yardstick competition by expenditure spillovers or competition for mobile tax base (Allers and Elhorst, 2005, 493). As the property tax base is the least mobile one, the reason for tax mimicking is most likely to be the yardstick competition (Blöchliger and Campos, 2011, 7).

Number of studies was conducted in the last fifteen years in order to determine spatial interactions among state and local governments (Delgado and Mayor (2011, 150) present a recent overview). Most of the studies dealing with property tax and local (municipal) level confirm these interactions estimating a spatial tax reaction function, where the tax rate or tax burden in one local government depends among other factors on the tax rates or tax burden of other local governments (Blöchliger and Campos, 2011, 7). The estimated spatial parameter shows how a change in property tax rate in a neighbouring municipality influences own property tax rate, i.e., in case of spatial

parameter equal to 0.3, a ten percent higher property tax rate in neighbouring municipality leads to a three percent higher tax rate.

On the basis of an analysis of local property tax rate in all 589 Belgian municipalities which was carried out in 1991, Heyndels and Vuchlen (1998) conclude that tax rates are copied among neighbouring municipalities. The estimated spatial parameter is 0.695.

In 2000, analyzing data for 143 adjacent municipalities in the Province of Milan, Italy, Bordignon, Cerniglia and Revelli (2003) found a positive spatial autocorrelation in the case of local business property tax rates. The spatial parameter was 0.25 or 0.3, depending on the estimation procedure used.

Using data from 2002, Allers and Elhorst (2005) found strong evidence of tax mimicking among 496 Dutch municipalities. The spatial parameter for the weighted average of residential and non-residential tax rate was 0.35.

Delgado and Mayor (2011) found a positive spatial property tax interaction evaluating data for all 78 municipalities in Spanish region Asturias. The spatial parameter was between 0.34 and 0.56, depending on the definition of neighbouring municipalities in case of the effective tax rate which took into account both the nominal tax rate and the fact when the property's value had been reassessed.

Fiva and Rattso (2007) found evidence of a geographic pattern in Norwegian municipal decision about having property taxation or not. They analyzed data for 301 municipalities (all municipalities with more than 2,500 inhabitants) in 2001. Silva Costa, Carvalho and Coimbra (2011) found a positive strategic interaction among all 278 municipalities in continental Portugal when they set rates of property tax between 2005 and 2009.

Unlike the other studies mentioned, Lyytikäinen (2011) did not find any strategic interaction in property tax rates among neighbouring 411 Finish municipalities between 1993 and 2004.

Overview of the property tax system

Since January 1, 1993 the property tax (real estate tax) has been regulated by the Act No 338/1992 Coll. and its 26 amendments. The property tax has two components: tax on land and tax on buildings. Since 2001, the law has included an arrangement for taxing apartments and non-residential units in the framework of the building tax. The tax on land combines the ad valorem and area based tax, and the tax on buildings is an area based tax. The tax rates differ based on the use of the property (see Enclosure 1 for the current tax rates). Since 1993 the tax rates were changed only once: in 2010, when most of the area based tax rates were doubled. Sedmihradská and Bryson (2010) provide a detailed review of nature and incidence of the Czech property tax.

Municipal autonomy regarding the property tax in the Czech Republic was very limited until 2009. While municipalities did not have any discretion regarding the land tax with the exception of the building plots, they could slightly modify the tax rates of buildings. There existed, and actually still exist, two parallel coefficients: a size coefficient and coefficient 1.5. The size coefficient can be applied in the case of building plots, residential houses and apartments. Different values of the size coefficient were assigned to municipalities of different size (see Enclosure 2), and coefficients applied for

municipalities with less than 1,000 inhabitants were increased in 2008. The statutory tax rate for the building plots, residential houses and apartments is multiplied by the size coefficient. Municipalities have the discretion to lower the size coefficient up to three levels and increase it by one level. There may be different size coefficients applied in different parts of a municipality and for building plots and buildings. Depending on the size of the municipality, the size coefficient can be reduced up to 0-100%, and increased by 14-40% (14 – 100% until 2007).

For the remaining building types (with the exception of other buildings) a coefficient of 1.5 is applicable, i.e., the municipality can increase the tax rate by 50%. This coefficient may be introduced for some or all types of buildings in the whole municipality. Thus, unlike the size coefficient, a differentiated approach to different localities in the municipality is not possible.

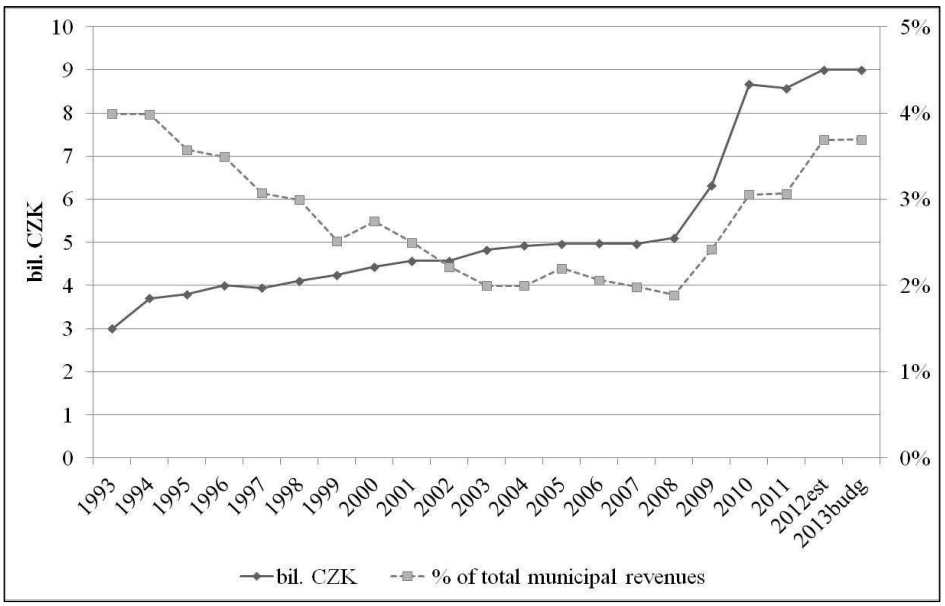
Since 2009, the so called local coefficient has been in force. It can take the value 2, 3, 4 or 5, and it is applicable to all property types with exception of the arable soil, hops fields, vineyards, orchards, permanent grass plots and gardens. Similarly to the coefficient 1.5, it is uniform for the whole municipality. Unlike the other two coefficients, application of the local coefficient can significantly change the tax yield. Simplified calculations based on the tax base structure in 2009 (Ministry of Finance, 2010) suggest that application of local coefficient 5 in all municipalities could bring about CZK 30 billion, i.e., quadruple the property tax revenue and increase the total municipal revenues by more than 10%. Since 2009, municipalities have been also able to exempt arable soil, hops fields, vineyards, orchards and permanent grass plots from the property tax.

Municipal councils approve all the three coefficients in a public notice. Until 2009, the deadline for approval of the notice was August 1, however, in reaction to the increase of most of the tax rates, the deadline was postponed to November 30 in 2009, and since 2010 it has been October 1.

To sum up, Czech municipalities can influence the tax rates through three types of coefficients which enforce quite a uniform approach to the entire territory of the municipality and, through the structure of the coefficients, to different types of property as well. While all the municipalities can increase their tax rates, only municipalities with more than a thousand inhabitants (only about 22% of municipalities) can slightly decrease the tax rate for building plots, residential houses and apartments.

The property tax revenue growth caused by the increase of tax autonomy in 2009, and the increase of tax rates in 2010 is documented in Figure 1 which shows the property tax revenues since 1993 in both nominal terms and as a share of total municipal revenues.

Figure 1: Property tax revenues (billions CZK, share on municipal revenues, 1993-2013)



Source: 1993-1996 Provazníková (2007), for 1997- 2009 ARIS, for 2010 and 2011 ÚFIS, for 2012 and 2013 Proposal of State Budget for 2013

Nationwide data on the use of all three types of the property tax coefficients were for the first time published in January 2010. Earlier research focused only on case studies or limited sample of municipalities, e.g., Hájek (2007) describes the application of the size coefficient in 17 municipalities, and concludes that only three municipalities (17%) increased the coefficient in some parts of their territory, and 6 municipalities both increased and decreased the coefficient in different parts of their territory.

Results of a detailed analysis of the 2010 data showed that 71% of Czech municipalities did not apply any coefficient and that less than 1% of municipalities applied all three coefficients (Sedmihradská, 2010). More precisely, 9.5% and 12.4 % of municipalities changed the size coefficient for building plots and residential buildings, respectively, and 21.6% introduced the 1.5 coefficient for at least one type of property. The application rate grows with the size of municipality. An analysis of the 2011 data shows similar results (Pribulová, 2012).

Municipalities appeared to be very cautious when applying the local coefficient: between 286 (4.6%) and 488 (7.8%) of municipalities applied the coefficient in different years, and only less than 15% of them used a coefficient higher than two. The double increase of most of the tax rates in 2010 caused abolishment of the already approved local coefficient in one third of municipalities. Changes in the application or size of the local coefficient are frequent. Table 1 shows the number of municipalities which applied local coefficient in the individual years together with its size. Data on municipalities with extended scope, which are subject to our analysis, are shown separately.

Table 1: Number of municipalities which applied local coefficient (2009-2013)

	All municipalities (6,251)					Municipalities with extended scope (206)				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
none	5,859	5,965	5,954	5,843	5,763	152	173	173	152	146
2	315	253	261	345	412	44	31	31	51	56
3	59	21	24	41	52	10	2	2	2	2
4	6	1	1	4	7					1
5	12	11	11	18	17	0	0	0	1	1
total	392	286	297	408	488	54	33	33	54	60
share (%)	6.3	4.6	4.8	6.5	7.8	26.2	16.0	16.0	26.2	29.1

Source: Czech tax administration, own calculations and presentation

Spatial distribution of the municipalities which apply or have applied the local coefficient is very uneven, as is shown in Enclosures 3 and 4. A comparison of the 2013 data at the regional level shows that the most intensive application of the local coefficient takes place in Karlovarský (23.5%) and Ústecký (17.2%) regions and the less intensive in Vysočina (2.7%) and Pardubický (2.4%) regions. At the level of catchment area of the municipality with extended scope, the maximum share of municipalities which apply the local coefficient is 60%, the median 4.2%, and in 72 catchment areas (35%), no municipalities applied the local coefficient in 2013.

Based on display of local coefficient usage in maps and comparison of the individual years 2009-2012, Eretová (2012) concludes that behaviour of the neighbouring municipalities may influence decision-making regarding local coefficient in a municipality.

Data and methods

The concept of yardstick competition links together spatial interactions and voting behaviour. As regards the Czech local coefficient, two questions may be raised: (1) Are municipalities neighbouring with municipalities which apply or have applied the local coefficient more likely to introduce, keep, decrease or abandon the local coefficient?, and (2) Did politicians who had introduced local coefficient get punished, i.e., did not get re-elected in the 2010 municipal council elections?

In order to answer these questions, we have used data for the 206 municipalities with extended scope. Data on the local coefficient from 2009 to 2013 come from the Czech Tax Administration which published a list of municipalities which had applied the local coefficient and its size on its web pages. Currently, the data are available only for some years. Due to the low number of municipalities using the local coefficient, we do not evaluate the size of the local coefficient, but only the fact that it was introduced.

We construct the following variables capturing the usage of local coefficient; *i* denotes the municipality with extended scope, *j* denotes municipality neighbouring with municipality with extended scope, and *t* is the year:

lc_{it} reaches the value 1 in case municipality *i* applied the local coefficient in the year *t* and 0 otherwise,

$before_{it}$ reaches the value 1 in case municipality *i* applied the local coefficient in the years before and including *t* and 0 otherwise. So $before_{i11}$=1 if the municipality *i* applied the local coefficient at least in one of the years 2009, 2010 or 2011,

low_{i10} reaches the value 1 in case municipality *i* either abolished the local coefficient in 2010, or reduced its size in reaction to general tax rate increase and 0 otherwise,

int_{it} reaches the value 1 in case municipality *i* introduced the local coefficient in the year *t*, i.e., it had the local coefficient in *t* but did not have in *t-1* and 0 otherwise. If the municipality *i* introduced the local coefficient in 2009, abolished it in 2010 and introduced it again in 2011, int_{i11}=1.

The number of municipalities for which a particular indicator (i.e., the dependent variable) reaches the value 1 is shown in Table 3, column Valid N 1.

Neighbouring municipalities *j* are municipalities with a joint border with the particular municipality with extended scope *i*. As the indicator of the usage of the local coefficient in the neighbouring municipality, we use the share of municipalities with local coefficients in all neighbouring municipalities, i.e., $n\text{-}lc_{it}$ is the number of neighbouring municipalities with lc_{it}=1 divided by the total number of neighbours of municipality *i* and $n\text{-}before_{it}$ is the number of neighbouring municipalities with $n\text{-}before_{jt}$=1 divided by the total number of neighbours of municipality *i*. While the development of the mean of $n\text{-}lc_{it}$ has the same U shape as the number of municipalities applying the local coefficient shown in Table 1, $n\text{-}before_{it}$ steadily grows as a result of the construction of the indicator. Descriptive statistics of $n\text{-}lc_{it}$ and $n\text{-}before_{it}$ are shown in Table 2.

The data on election results come from the election statistics provided by the Czech Statistical Office which publishes among others the number of elected council members belonging to individual political parties or groupings. This enables identification of the strongest political party or grouping, i.e., the winner. Unfortunately, quite frequently there is more than one winner (34 cases in 2006 and 37 cases in 2010) and the groupings of independent candidates change their names. The variable $reelect_i$ reaches the value 1 in the case that the winner was the same in 2006 and 2010, or at least one of the winners in 2006 was also the winner in 2010. In case of groupings of independent candidates with different names, we double-checked the names of the council members, and in case of some overlap $reelect_i$ =1 as well. In case of repeated elections (in 2006 in Most and Havířov, and in 2010 in Český Těšín and Roudnice nad Labem) we took into account the results of these repeated elections.

The difference of means test (t-test) was used in order to determine if the share of neighbouring municipalities with local coefficient is different for municipalities with and without the local coefficient, and if the share of re-elected winners is different in municipalities with and without local coefficient. The calculations were done in Statistica 7.1.

Table 2: Descriptive statistics

	Valid N	Mean	Minimum	Maximum	Std.Dev.
n-lc09	206	0.0829	0.00	0.8000	0.1264
n-lc10	206	0.0499	0.00	0.4286	0.0912
n-lc11	206	0.0515	0.00	0.5000	0.0966
n-lc12	206	0.0726	0.00	0.5455	0.1217
n-lc13	206	0.0831	0.00	0.5556	0.1272
n-before10	206	0.0987	0.00	0.8000	0.1358
n-before11	206	0.1015	0.00	1.0000	0.1445
n-before12	206	0.1202	0.00	1.0000	0.1570
n-before13	206	0.1332	0.00	1.0000	0.1623
re-elect	206	0.5874	0.00	1.0000	0.4935

Source: own calculations

Results and discussion

Municipalities can change the public notice on property tax coefficients every year so in case of 206 municipalities, five sizes of the local coefficient and five years too many decisions took place. Therefore, we group them into three broad categories: (1) introduce, (2) lower or abolish in 2010, and (3) keep without further evaluation of the size changes. The results of the difference means test are shown in Table 3.

Share of neighbouring municipalities with the local coefficient ($n\text{-}lc_{it}$ or $n\text{-}before_{it}$) is the dependent variable. Grouping variable refers to the municipality with extended scope and takes the value of 1 and 0, as specified above. The results in the first line of Table 3 show that in 2009, 54 municipalities with extended scope applied the local coefficient (column Valid N1). Column Mean 1 shows that 10.5% of neighbours of a municipality which introduced the local coefficient introduced (applied) it as well. In case of a municipality without the local coefficient, this share was only 7.5%. In this case, the mean difference is not significant (p=0.1388).

With the exception of 2011, the decision to introduce the local coefficient was not influenced by the behaviour in the neighbourhood. These municipalities had to approve the public notice shortly before municipal council elections which took place on October 15 and 16, 2010, so they looked carefully at what the neighbours did, and if they could justify their behaviour based on them. In three out of the four municipalities, the winner retained his position.

The decision to lower (5 municipalities) or abolish (27 municipalities) the local coefficient in reaction to the increase of the tax rates in 2010 was not influenced by the situation in the neighbouring municipalities.

Table 3: Results of the difference of means test

Dependent var.	Grouping var.	Mean 1	Mean 0	p		Valid N 1[1)]	Std.Dev. 1	Std.Dev. 0
Introduce								
n-lc9	lc9	0.1048	0.0751	0.1388		54	0.1357	0.1224
n-lc09	int10	0.1057	0.0822	0.6555		6	0.2295	0.1230
n-lc10	int10	0.0957	0.0485	0.2119		6	0.1671	0.0883
n-before 10	int10	0.1195	0.0981	0.7039		6	0.2243	0.1331
n-lc10	int11	0.1111	0.0487	0.1755		4	0.1039	0.0908
n-lc11	int11	0.1736	0.0491	0.0104	**	4	0.2227	0.0921
n-before11	int11	0.3214	0.0972	0.0020	***	4	0.4526	0.1314
n-lc11	int12	0.0530	0.0514	0.9413		21	0.0877	0.0978
n-lc12	int12	0.0815	0.0716	0.7248		21	0.1040	0.1238
n-beore12	int12	0.1187	0.1204	0.9618		21	0.1239	0.1606
n-lc12	int13	0.1385	0.0693	0.0794	*	10	0.1823	0.1175
n-lc13	int13	0.1385	0.0803	0.1583		10	0.1823	0.1237
n-before13	int13	0.1952	0.1301	0.2170		10	0.1898	0.1607
Lower or abolish								
n-lc9	low10	0.1018	0.0794	0.3588		32	0.1559	0.1204
n-lc10	low10	0.0501	0.0498	0.9868		32	0.0949	0.0907
n-before10	low10	0.1071	0.0972	0.7048		32	0.1577	0.1318
Keep[2)]								
n-lc09	lc10	0.1221	0.0754	0.0514	*	33	0.1407	0.1225
n-lc10	lc10	0.0798	0.0442	0.0395	**	33	0.1273	0.0818
n-lc10	lc11	0.0888	0.0425	0.0071	***	33	0.1298	0.0801
n-lc11	lc11	0.0914	0.0439	0.0095	***	33	0.1425	0.0836
n-lc11	lc12	0.0764	0.0427	0.0271	**	54	0.1246	0.0833
n-lc12	lc12	0.0979	0.0637	0.0763	*	54	0.1428	0.1125
n-lc12	lc13	0.1111	0.0568	0.0034	***	60	0.1511	0.1039
n-lc13	lc13	0.1238	0.0663	0.0030	***	60	0.1462	0.1149

Source: own calculations
*Note: * denotes 90%, ** 95 % and *** 99% of statistical significance respectively*
1) Valid N 0 =206-Valid N 1, 2) application of the variable n-before$_{it}$ brings similar results as n-lc$_{it}$

Strong influence of the neighbours is, however, evident when evaluating municipalities which apply (keep) the local coefficient. They are surrounded by a higher share of municipalities which applied the local coefficient in the past, or apply it at the given moment, than municipalities without the local coefficient. These differences can be observed in all years analyzed. The difference between the means is upward biased to some extent because simultaneity is not taken into account.

Our findings are consistent with the research undertaken abroad: There is evidence of property tax mimicking in case of municipalities. Due to different methodology applied, it is unfortunately not possible to compare the intensity of the spatial interdependence.

Out of the 206 municipalities with extended scope, the winner of 2006 election got re-elected in 2010 in 58.7 % cases. The comparison of the re-election rate in municipalities with (group 1) and without (group 0) the local coefficient shows significant differences regardless the variable used (see Table 4). The difference is highly significant in case that the municipality applied the local coefficient in 2010, i.e., voters remembered the high tax bill in May 2010 when they went to the polls in October 2010, and voted for the previous winner only in 36.4% of the cases. Surprisingly, voters did not reward the politicians who abolished or lowered the 2009 local coefficient.

Table 4: Results of the difference of means test of *reelect*

Grouping variable	Mean 0	Mean 1	p		Valid N 0	Valid N 1	Std. Dev. 0	Std. Dev. 1
lc10	0.6301	0.3636	0.0042	***	173	33	0.4842	0.4885
before10	0.6301	0.4833	0.0522	*	146	60	0.4844	0.5039
lc11	0.6185	0.4242	0.0379	**	173	33	0.4872	0.5019
before11	0.6319	0.4839	0.0480	**	144	62	0.4840	0.5038
low10	0.5920	0.5625	0.7572		174	32	0.4929	0.5040

*Note: * denotes 90%, ** 95 % and *** 99% of statistical significance respectively*

These results comply with rich empirical evidence for effect of tax variables on election results (for an overview, please see Vermeir and Heyndels (2006, 2286)).

We focused on two factors which influence the decision whether to apply the local coefficient or not. There are, however, other factors which are equally or even more important. Anecdotic evidence (e.g. Michalcová, 2012) suggests the importance of the tax base structure, i.e., municipalities are more likely to introduce the local coefficient if a significant share of their cadastre comprises in recreational or entrepreneurial buildings. Unfortunately, the data on tax base structure are not publicly available, so a more methodical research into this issue is not possible now.

Urgent need of additional revenues in the case of decline in other revenue sources or growing expenditure needs, for example in the case of fast population growth, may be another reason for introduction of the local coefficient. The research into these factors could possibly be the next step in exploration of the property tax role in Czech municipal finance.

Conclusions

Czech municipalities received new property tax autonomy in 2009: by applying the local coefficient, they may increase most of the tax rates up to five times. So far only a minority of municipalities applied the local coefficient (about 8% of all municipalities and 30% of municipalities with extended scope).

A possible explanation of this reluctance is offered by the theory of yardstick competition: Voters do not vote for politicians who increase taxes unless politicians in

neighbouring jurisdictions increase taxes as well. So municipal politicians are carefully observing what others do and approve the local coefficient with prudence.

The results of the difference of means test using data for 206 municipalities with extended scope comply with this theory: (1) politicians who applied the local coefficient in 2010 got re-elected in significantly less municipalities than those who did not, and (2) in all years analyzed, municipalities applying the local coefficient are surrounded by a higher share of municipalities with local coefficient than those without it.

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Appendix

Enclosure 1: Tax rates (January 1, 2012)

	Tax base	Tax rate
Land type	Arable soil, hops fields, vineyards, orchards	0.75%
	Permanent grass plots	0.25%
	Economic forests and ponds with industrial fish farming	0.25%
	Gardens	0.75%
	Finished building areas and courtyards, other areas	0.20 CZK/m^2
	Building plots	2.00 CZK/m^2
	Paved plots	
	• Used for original agricultural production, forest and water industries	1.00 CZK/m^2
	• Used for industry, building industry, transport, energy industry and other entrepreneurial activities	5.00 CZK/m^2
Building type*	Residential houses	2.00 CZK/m2
	Family houses and holiday houses for individuals	6.00 CZK/m2
	Garages built separately from residential premises	8.00 CZK/m2
	Buildings	
	• Used for original agricultural production, forest and water industries	2.00 CZK/m2
	• Used for industry, building industry, transport, energy industry and other entrepreneurial activities	10.00 CZK/m2
	Other buildings	6.00 CZK/m2

*Note: * In case of apartments and non-residential units the same tax rates are used depending on the purpose.*

Source: Source: Act No 338/1992 Coll. and its amendments

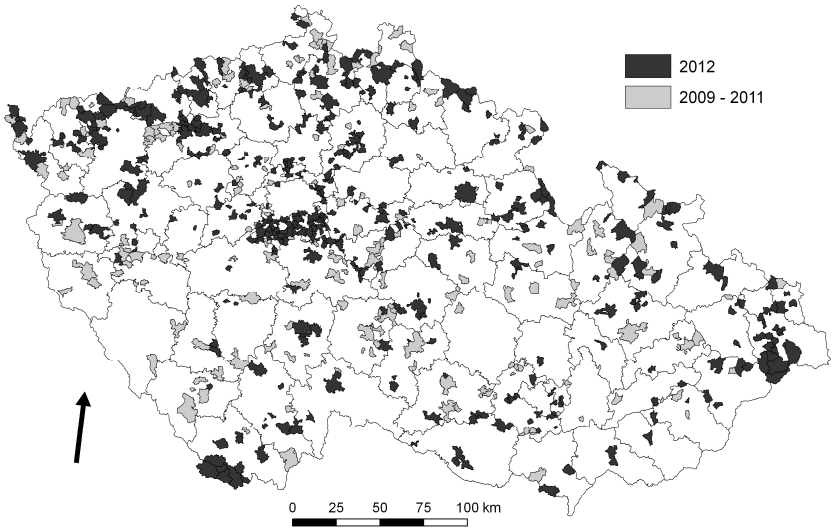
Enclosure 2: Size coefficient

Size coefficient	Number of inhabitants		
	1993-2007	2008-2011	2012+
0.3	less than 300	NA	
0.6	301-600		
1	301-1,000	less than 1,000	
1.4	1,001-6,000		
1.6	6,001-10,000		
2	10,001-25,000		
2.5	25,001-50,000		
3.5	above 50,001, spa towns*		above 50,001, statutory cities, spa towns*
4	NA		
4.5	Prague		

*Note: *Františkovy Lázně, Luhačovice, Mariánské Lázně and Poděbrady*

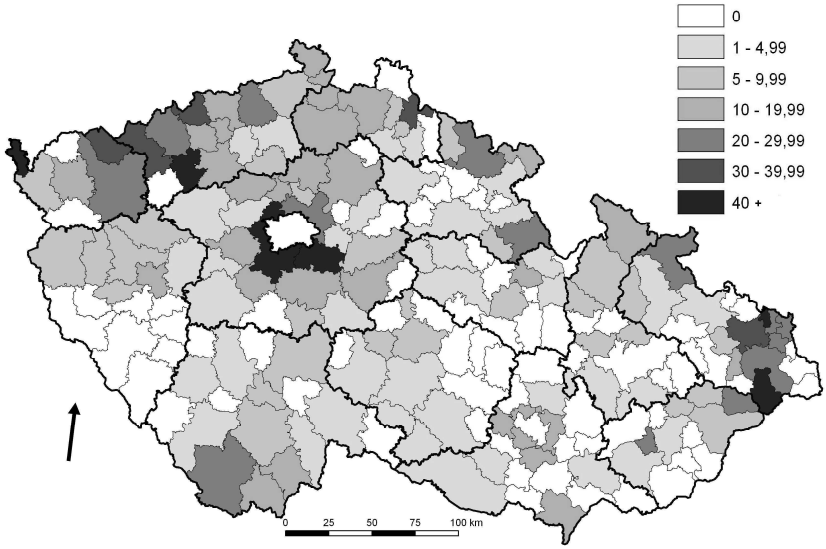
Source: Source: Act No 338/1992 Coll. and its amendments

Enclosure 3: Municipalities applying local coefficient in 2012 and in previous years



Note: regional and district borders are shown

Enclosure 4: Share of municipalities which apply local coefficient in the catchment areas of municipalities with extended scope (2012, in %)



Note: regional borders and borders of the catchment areas of municipalities with extended scope are shown