

IS THERE TARIFF MIMICKING? THE CASE OF WATER PROVISION IN POLAND

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ABSTRACT

The concept of competition in public finance is usually applied to taxes, and it is often used to analyse policies of local governments. There are two types of tax competition: classic for mobile tax base and yardstick competition, in which local politicians compete for political capital being related to comparison of tax rates with neighbouring municipalities. The latter type is often addressed as tax mimicking in which rates in one municipality are following decisions made in close geographic proximity (neighbouring municipalities). In our paper we argue that in Central and Eastern Europe the concept might be even more useful in case of tariffs for local public services than in case of local taxes. It is due to relatively low tax autonomy of local governments and low tax yields collected from local taxes. We test applicability of the mimicking model in explaining variation of tariffs for water provision in three Polish regions. The test includes controlling variables, such as population size, affluence of local budgets and location and is conducted through multiple linear regression model. This method will allow us to determine whether geographical proximity is indeed a decisive factor, or is similarity of tariffs a result of other similarities of socio-economic environment.

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INTRODUCTION

The focus of this article is on geographical (spatial) determinants of the local financial policies. The discussion and empirical analysis of the article is a next step of the studies presented during the 2017 Geobalcanica conference [11]. In this paper we try to apply the tax competition theory and related concept of tax mimicking to the analysis of policies related to tariffs for local public services.

Although empirical study concentrates on Poland, it may have a wider importance for the whole region of Central and Eastern Europe. The concept has been recently tested in the local government studies to analyse tax policies in Poland [7], [12], and the Czech Republic [10], but now it is proposed to borrow the concept of competition to study tariffs of local services, such as charges for water provision.

THE CONCEPT OF TARIFF MIMICKING – THEORETICAL DISCUSSION

Conceptually this article borrows from the concept of tax competition, which in its application to local policies can be related to spatial interactions between fiscal policies of jurisdictions which are located close to each other. The model of tax competition has been created to explain national tax policies, but it may be applied to the local level as well.

There are two different potential forms of the tax competition:

- Competition for a mobile tax base, in which local government tries to attract movement of capital, companies or residents to the given jurisdiction. It leads to the growth of the local tax base, and in the ideal scenario, also to a resultant growth of budget revenues. The positive impact on the local budget can be direct (increased revenues from the tax of which the rate is a subject of competition) or indirect: e.g. local jurisdiction attracts new tax-payers through the competitive rate of the property tax, which indirectly generates new income from other taxes.
- Maintenance or increase of the political capital – tax rates are adjusted in the considered jurisdiction, taking into account the tax rates of the neighbouring municipalities in order to satisfy local voters and to secure political support in local elections. In this case one may talk not about ‘classic’ competition for the tax base, but about the concept known in economics as ‘yardstick competition’.

In the latter case of ‘yardstick competition’ there is no reason to expect that reduction of the tax rate may be compensated for by the growth of the local tax base. In this case one may talk rather about the exchange between financial and political capital [8]. The situation of ‘yardstick competition’ is sometimes referred to as ‘tax mimicking’, i.e. the situation in which governments replicate policies noticed in other governments. The concept of competition or mimicking has been applied usually to tax policies (see the review of earlier studies in [12]), but as we argue in following section of this article, in some circumstances it may be even more useful for analysis of tariffs for local public services.

Tariff mimicking is defined in this article as the situation in which the local tariff in the given jurisdiction is set under the strong influence or it is changed as a reaction to the level of tariffs applied by neighbouring jurisdictions. In fact tariff mimicking does not need to be related to geographical neighbourhood only. One can think about the situation in which for example the regional city analysis its policies on tariffs comparing it with other (distant) cities of similar size and function, not with the immediate neighbours. But in our analysis we narrow-down the concept to the focus on spatial proximity.

Relatively numerous empirical studies of local tax competition in Western Europe have so far very few equivalents in Poland or other countries of the Central and Eastern Europe. Studies of Poland [12] confirmed yardstick competition for tax on agriculture and property tax. Another study of property tax in Poland [7] has confirmed tax mimicking for the property tax in metropolitan regions (although presented empirical results are not fully convincing). The same concept has been also positively tested for the property tax in the Czech Republic [10]. But these are very rare examples of such analysis in the Central and Eastern Europe. Moreover, in case of tariffs for public services the empirical tests of the concept have been so far even more rare, if not non-existent at all.

What might be factors deciding which of the tariffs are more prone to be subject of tariff mimicking. Relying on borrowing from earlier studies of tax competition [1], [2] as well as more general considerations based on fiscal federalism [6] one may formulate following characteristics which make tariff mimicking more likely to happen:

1. **Popularity of the consumption.** If influencing the behaviour of voters (building or maintaining the political capital) is in the core of the concept, we should expect that local governments would be willing to mimic the tariffs of services which are important for most of the voters, not those which are consumed by the small proportion of their electorate. Following this criterion we should indeed expect the high likelihood of the tax mimicking in case of water provision, which at least in Poland is provided to nearly all households.
2. **Visibility of the tariff.** In case of water it is considerable, but lower than some other services (such as tickets for local public transport). Several consumers pay for water through bank standing orders (direct debit), not having occasion to study carefully details of each of the payments. Moreover, in several multi-flat houses cost of water is combined into one bill with other payments related to heating, hot water and rent for the apartment, which makes clear recognition of individual elements much more difficult.
3. **Distinction between services in which local governments have full discretion to decided tariffs and those in which setting tariffs is restricted by the law and/or has more technocratic character.** The mimicking is possible only if local governments have considerable discretion to decide upon tariffs. In relation to water provision in Poland this issue is discussed in methodological section of this article.
4. **The size of local governments.** The phenomenon of tax mimicking is more likely in small jurisdictions and in rural setting than in case of larger cities. It is related both to physical access to information as well as to rural versus urban style of life which influence the density of contacts with consumers in neighbouring jurisdictions.

Building on the asymmetry of information between voters (tax-payers) and political representatives Reulier & Rocaboy [9] expect also that the decision on the local tax rate will depend on the variation of rates among neighbouring jurisdictions. The larger the variation is, the easier it is for politicians to apply higher tax rates in their own jurisdiction, since it is more difficult for voters to treat the surrounding region as a *yardstick* in the political debate. We apply exactly the same logic to our study of tariff mimicking.

TARIFF MIMICKING IN POLAND – HYPOTHESIS AND METHODS OF EMPIRICAL TEST

The main research question is:

- Do changes of tariffs for local services in neighbouring municipalities induce similar changes in an analysed local jurisdiction?

In our study we concentrate on tariffs for water provision. Apart of solid waste collection it is the most commonly delivered local government service. Other tariffs charged by local governments, such as tickets for local public transport or rents in communal housing, are paid only by some residents. Moreover they are not provided by all local governments, so tracing spatial interactions with tariffs imposed in neighbouring municipalities would be very difficult, if not impossible. But both in case of water and waste management we have reasons to expect a strong spatial interaction of local policies in form of tariff mimicking. The popular provision of service together with considerable burden on household budgets (the total amount of tariffs paid is several times higher than the yield of local taxes paid by Polish residents) makes potential interest of voters in level of tariffs higher than in the level of local taxes. But the study of tariff for solid waste collection would be more complicated due to recent reform of the organization and payment for that

service. In case of water the system has been more stable and data is relatively easier to access.

In their theory of typical responses for fiscal stress, Wolman and Davis [13] suggest, that increasing charges for services is politically easier than raising rates of local taxes. That observation has been confirmed in some European studies – e.g. in Switzerland [5], in Norway [4] and Denmark [3]. Dafflon notes that tax competition in Switzerland has been leading to local tax rates reduction (phenomenon known as *race to the bottom*). In such a situation the increase of tariffs for local services may compensate the loss of tax yields. It is often accompanied by the effectiveness argument – reduction of subsidies to local services helps to liquidate illusion of *free lunches* and improves efficiency in allocation of resources. But part of explanation is that comparing of tariffs with neighbor communities is less often that in case of rates of local taxes. Therefore reduction of taxes helps politicians to present to their voters in “better light” even if they increase user charges at the same time. We suggest the opposite logic to be applied in Polish environment, and perhaps also in several other countries of Central and Eastern Europe, where local taxes play even more marginal role than in Poland. Since local taxes are limited, we expect more competition (similar to *tax mimicking* phenomenon) in tariffs for local services, which – as we argued before – are more important for household’s budgets than local taxes.

Therefore our main hypothesis is that:

In Poland there is a tariff mimicking (following the logic of yardstick competition) phenomenon in case of tariffs for water provision and sewage, and this is stronger than in case of local tax mimicking.

How the tariff for water is defined in Poland? From purely formal point of view the impact of local government is minimal. Tariff is proposed by the company which provides the service and it is based on quite precise rules stipulated by the 2001 Law on Water Provision and 2006 Ordinance on Tariffs for Water and Sewage Services². The role of the council is just to check calculation and approve (or reject) the tariff. Moreover, in some cases, even rejection by the council may only delay the introduction of the tariff by couple of months, after which it is enforced even without the consent of local government. So at a first glance it looks like there is no space for politics in the whole process of tariff setting, which would be a pre-condition for tracing the tariff mimicking. But practice often deviates from this formal picture. First, rules concerning calculation of costs include elements which may be part of political negotiation (e.g. profit of the company, property tax, sometimes also depreciation of fixed assets). Second, if local government is the share-holder of the company (in practice it is frequently the only share-holder) the city mayor has significant power of informal influence on the behaviour of the company submitting the tariff proposal. Therefore, there are reasons to expect that the political process of tariff setting plays a significant role and that comparing with policies of neighbouring municipalities may be a potentially significant element of that puzzle.

Our empirical strategy relies on two methods:

1. Interviews with local politicians (mayors) and technocrats (heads of municipal companies responsible for water provision) in which we ask about various motives taken into account during preparation of decisions concerning the tariffs. In particular

² Basic element of the tariff (which is considered by our study) is set per cubic meter. In some municipalities the tariff is different for various users (e.g. higher for businesses), but having in mind the purpose of the study we concentrate entirely on tariffs for households.

we ask the question on how important to them is to analyse tariffs in neighbouring municipalities. So far the survey and interviews have been conducted in one Polish region only (Opolskie), so these results should be treated as tentative. They will require confirmation on the larger sample of local governments in other regions of different characteristics;

2. Quantitative analysis using regression model allowing to test whether level of tariffs (in 2016) is related to tariffs in neighbouring municipalities.

Methodologically, the issue of testing to what extent the rates in an analysed municipality are dependent in the level of rates in neighbouring local governments is complex. The level of tariffs depends on several other characteristics of the local environment, such as population size, the wealth of the local community etc. In some cases these other explanatory variables are related to the features connected to the location of the local jurisdiction. In particular it concerns the distance from major agglomerations. As a consequence, even if there is a positive correlation between the level of tariffs in analysed municipality and tariffs in neighbouring local governments, it is not certain if one may ascertain that relationship to be the outcome of the tariff mimicking, or rather to 'common location' (e.g. in the vicinity of the large urban centre). Therefore that relationship is investigated through the Hierarchical Multiple Regression model, that allows to specify a fixed order of entry for variables in order to control for the effects of covariates and to test the effects of certain predictors independent of the influence of others. In the model correlation with tariffs of the neighbours will be controlled by the distance from agglomerations and other factors. The model which we test may be summarized in the following equation:

$$TL(i) = f(\overline{NTL}, \sigma(NTL), LE(i)) + \varepsilon$$

Where:

$TL(i)$ – tariff level in municipality i

\overline{NTL} , – mean of tariffs in neighbouring municipalities ($\overline{NTL} = \frac{\sum_{j=1}^n TL(j)}{n}$, where n – number of municipalities which are neighbours of municipality i)

$\sigma(NTL)$ – standard deviation of tariffs among neighbouring municipalities

$LE(i)$ – local environment measured by population size, wealth of local community and distance from large agglomeration centres

ε – residual.

The empirical test has been conducted for 349 municipalities located in three different Polish regions (Opolskie, Podkarpackie and Podlaskie) plus nearly 70 immediate neighbour municipalities from adjacent regions.

RESULTS AND DISCUSSION

The results at least partially confirm our hypothesis. In our pilot study conducted in one of Polish regions, considerable proportion of interviewed mayors and heads of water companies declared that they take into account tariffs adopted in neighbouring municipalities when they prepare the decision for their local government (see table 1). As we can see in the table, in case of water provision such a motive is more frequently considered than in case of other services – prices of tickets in local public transport or

rents in municipal housing. The difference between role of “tariff mimicking” in case of water and other services may be probably ascertained to the fact that the proportion of service customers to total number of voters is much larger in case of water, so avoiding their complaints is politically very important. But at the same time results of the earlier study of local tax policies [12] demonstrate that self-declared “tariff mimicking” is not more often than declared “tax mimicking”. In case of property tax and tax on agriculture it is even marginally more common that in case of water. But this difference should be confirmed in the future studies, so far the interviews concerning policies on tariffs for local services has been conducted in one Polish region only, and the total N of the sample is low.

Table 1. Local tariff mimicking and tax mimicking in Poland as declared by local government politicians and officials – proportion of respondents who declare that taking into account tariffs in neighbouring municipalities is important for decisions on local tariffs and taxes.

Tariffs for local public services (N=19)	Local taxes (N=111)
% of “yes” and “definitely yes” answers	% of “yes” and “definitely yes” answers
Water provision 43%	Tax on commercial properties 49%
Tickets for public transport 40%	Tax on housing properties 44%
Rents in municipal housing 15%	Tax on agriculture 47%
	Tax on motor vehicles 13%

But to what extent this subjective declarations are confirmed by actual data on adopted tariffs. The first general answer is provided by correlation between the tariff in given municipality and level of tariffs among their neighbours. As we see in the table 2, there is a statistically significant correlation both with the absolute level and with standard deviation of tariffs among members. It suggests first of all tariff mimicking, and second, that the likelihood of mimicking is higher if all neighbours have similar tariff level, so the resident of the municipality has a more clear information on the comparison between his duties and those which are paid by his neighbours leaving in towns and villages nearby.

Table 2. Pearson correlation coefficients between level of tariff for water in the neighbouring municipalities (2016 data, N=349)

Correlation with:	
Mean of tariffs in neighbouring municipalities	Standard deviation of tariffs in neighbouring municipalities
0.631	0.391

Note: both of coefficients are statistically significant on 0.001 level

But as we discussed in methodological section of the paper, the similarity to tariffs which may be found in the neighbouring municipality might be potentially unrelated to tariff mimicking, but may originate from the similarity of social and economic environment. If similarity of tariffs in neighbouring municipalities is caused more by the similar conditions than by pure ‘neighbouring factor’, then the variation should be explained better by factors such as the affluence of the local community or the distance from large urban agglomerations. But if the impact of the neighbourhood remains significant after including the other controlling variables in the model, it may mean that tariff mimicking plays a role in explaining the variation of policies concerning the local tariffs for services. Therefore we add to our model control variables which should help us to avoid biased conclusions.

Table 3. Regression models explaining level of tariffs for water provision in the three Polish regions (2016 data, N=349)

	R ²	Significance of the model
	0.410	0.000
	Beta	Significance
Affluence of local community		
Population size	0.103	0.022
Distance to agglomeration		
Level of tariffs in neighbouring municipalities	0.726	0.000
Standard deviation of tariffs in the neighbourhood	-0.154	0.009

Note: Beta coefficients are quoted only in the case of a relationship significant on 0.05 level. Blank spaces mean no significant impact of the variable.

Source: own calculations on the basis of municipal budget reports.

The results of the regression model presented in the table 3 confirms that:

1. The level of tariff in the neighbouring municipality remains significant, even if controlled by other variables in the model;
2. There is also significant, although weaker than in the previous item, impact of standard deviation of tariffs among neighbouring municipalities. It confirms theoretical expectation of Reulier and Rocaboy [9] that the larger is variation of tariffs in adjacent local jurisdictions the easier is the increase the tariff in a given municipality.
3. The only other significant variable is population size (tariffs for water are usually higher in larger local government units), but the “neighbourhood factor” remains the single, most powerful variable in the model. This is a strong confirmation of the “tariff mimicking” hypothesis.
4. Moreover: the explanatory power of tariff in neighbouring municipalities is higher than similar relationship found in our previous studies of tax policies (compare results in [11] and [12]). This suggests that in Poland, at least in case of water provision, the effect of “tariff mimicking” is stronger than “local tax mimicking” (or yardstick local tax competition).

To sum up, neither the significance of the mean of the tariff in the adjacent jurisdictions neither the significance of the standard deviation of tariffs in neighbouring municipalities has vanished in the regression model. It suggests that the variation of policies applied in the region does not have such a strong importance as some earlier theories and studies had expected.

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