*Marcin Będzieszak*
Collegium of Management and Finance
SGH Warsaw School of Economics

# Do large Polish cities substitute their own-source revenues with fees and user charges?

## Abstract

This paper aims to assess if large Polish cities use fees and user charges to substitute other own-source revenues. The analysis has been conducted on a panel of 65 large cities in Poland in the period of 2004–2015. Using OLS and fixed effect panel analysis, it has been proved that cities pursue their policy in order to maximize their revenues, which is in line with the Leviathan theory assuming that public authorities maximize public revenues. Additionally, using the normalization quotient mapping, it has been confirmed that cities do not change their revenue policy in terms of taxes vs. fees and user charges trade-offs.

**Keywords**: fees, user charges, local budgets, tax and non-tax revenues
**JEL Classification Codes:** H20, H27, H71

## Introduction

Large cities pursue various objectives in their budgetary policy. They may maximize (or optimize) budget revenues in order to achieve certain debt ratios, increase the efficiency of the public services delivery, minimize the deficit, and smooth revenues, etc.

Local fiscal policy is implemented with respect for the rules imposed by the law, which relate, for example, to adjusting local tax rates, rates of certain user charges (e.g. for kindergartens) and rents for the lease of residential premises. In Polish conditions, it leads to a very limited self-reliance in the field of the development of own-source revenues, as an essential part of them comes from share in income taxes and several less significant levies (stamp duty and inheritance tax), when the rates are regulated at the central level, so the impact of cities on these taxes is limited only to an indirect influence on the tax base (influencing economic activity which will increase the income of individuals and businesses, location of the business or the purchase and sale of assets). A small amount of own-source revenues is associated with the actual impact of cities on the revenues from this source, for example, the selected structural elements of local taxes, fees and user charges, and rents for the lease of premises.

Both in the world and in Poland, there is an observable trend of increasing revenues from fees and user charges. It is visible mainly in the long term, but the share of revenues of these types of sources in cities' finance, in particular in budgets, increases. Due to the nature of the charges related to a particular service, they should serve at least balancing the costs/expenses associated with the provision of services, but reality shows that it is not so in most cases. Changes in revenue policy are associated with the use of the available capacity adjustment of revenues, which will allow for the implementation of a set of objectives. In most cases, this is to maximize the revenues in accordance with the Leviathan theory.

The aim of the paper is to show how to assess if large Polish cities use fees and user charges to substitute other own-source revenues.

The structure of the article is as follows: section 1 reviews recent research on fees and user charges in local government, section 2 highlights the most important issues on own-source revenues in large Polish cities, section 3 justifies the model and selected variables and section 4 describes the results. The paper ends with conclusions and a discussion.

## 1. Literature review

Local government units, having limited possibilities of regulating their basic revenues, look for other, more flexible sources of revenue. One of the most promising categories of revenues is user charges for services provided by local government units. The biggest supporter of the introduction of fees and user charges in local government is Bird [1993]. He points out that user charges should be implemented wherever possible, and only in a situation where

it is not possible or if there is another source of funding services (e.g. central government grants), they should be financed by taxes or grants. At the same time, it is pointed out that the introduction of user charges is more appropriate in a decentralized system [Bardhan, Mookherjee, 2006]. Brazer [1958], in his guidelines for the financing of metropolitan cities shows even that income and consumption taxes as well as user charges should be the main sources of cities' revenues, and dependence on property tax should be significantly reduced. According to Altshuler et al. [1993], user charges are attractive for local governments because in this way they capture a larger percentage of the total available revenues.

According to research by Bartle et al. [2011], user charges have grown from 10.4% of total revenues in 1975 to 15.7% in 2007: Borge [2000] even indicates that the increasing importance of these revenues to local governments' budgets is an international trend, and the relationship between user charges and other sources of public revenues have been discussed for years. Huber and Runkel [2009] came to similar conclusions in their study. They indicate that user charges for public services in recent decades have become very significant despite the continued dominance of taxes; an example is a share of user charges in the federal budget revenues, where the share of payments increased from 8.8% (fiscal year 1976–1977) to 10.5% (fiscal year 1991–1992) and at the local level from 10.7% (fiscal year 1976–1977) to 15.3% (fiscal year 2000–2001). This trend was confirmed by a study conducted by Feld, Kirchgässner and Schaltegger [2003] in Swiss cantons.

The introduction of user charges for services is one way to increase revenue diversification. This phenomenon is well documented, both in terms of user charges and other non-tax revenues [Hendrick, 2002; Schunk, Porca, 2005; Bartle et al., 2003; Yan, 2012]. The objectives of these activities are twofold. On the one hand, according to the Leviathan theory [Buchanan, 1980], the aim is to generate additional revenues, if there is such a possibility, but on the other hand – smoothing revenues, in the case of the ones which are vulnerable for fluctuations. In addition, the introduction of user charges allows for the actual valuation of public services, since in the case of financing services with taxes, there is an excessive demand for them due to the lack of the above information on the cost [Winter, Mouritzen, 2001; Dilorenzo, 1982]. Jang and Kwon [2014] point out that elected mayors prefer to increase fee-supported services rather than rely on property taxes and that it is a good option when cities have limited property tax revenue.

Regardless of the aim, the trend of increasing revenue diversification is a fact. Research conducted by Chemick et al. [2011] provides evidence to support the thesis that varied revenues provide more financial resources than those based mainly on property tax. The latter provides a stable source of revenue, but increasingly there is a postulate to seek other sources. User charges are one of the relatively homogeneous categories of revenues; hence so much attention is devoted to them. Jung and Bae [2012] demonstrated that the existence of local tax and expenditure limits (as well as the state limits) leads to an increase in the share of service charges.

It should be remembered that the introduction of user charges is associated with many other effects, both in a strictly financial and economic sense. Bardhan and Mookherje [2006]

show that in the case of the restrictions of local governments to fund services with the use of user charges, the extent of regressive transfers is limited. It should be also noted that revenue diversification does not, however, lead to an increase in local government spending. This is confirmed by studies conducted on panel data from the years 1970–2002 [Carroll, 2009] and 302 Flemish municipalities [Heyndels, Smolders, 1994].

## 2. Own-source revenues and user charges in large Polish cities

Large cities in Poland represent a group of local government units, in which case there is the highest level of financial independence [Heller, 2006].

Own-source revenues in local government must have two features: their amount depends on activities of the local government and their tax base (more broadly: the economic base) is located on the territory of the local government unit [Kosek Wojnar, Surówka, 2007]. In the literature, there has been a wide discussion about the legitimacy of including shares in income taxes to own-source revenues. In addition, it should be noted that other taxes, such as inheritance and gift tax, do not have the features. Nevertheless, the legal definition of own-source revenues is strict in this matter. Also considering the significance of these taxes and the growing number of literature items on this matter, the broad definition will be used.

Operational[1] own-source revenues of large cities can be divided into 4 groups, from the point of view of the potential impact of economic downturn on the amount of executed revenues:

- Local taxes and local fees: in their case, lower execution may result from three situations. Firstly, a lower collection of revenues in the economic downturn. Secondly, it may result from the intended use of the instruments of support for enterprises by reducing the tax burden in the field, for example, property tax or a tax on the means of transportation. These revenues are stable. This group also contains revenues other than those already mentioned, such as agricultural tax, forestry tax and fees. Thirdly, the municipality in the case of these types of revenues can apply a reduction in the tax rates, exemptions, redemption, and ultimately in the current economic situation, depending upon the earlier revenue policy, it may lead to the application of e.g. the maximum local tax rates in order to supplement their revenue, if the previously used were lower or, less likely, lowering these rates, assuming that they strengthen the collection of lower taxes.

- Shares in corporate income tax and personal income tax. Municipalities have no direct influence on the amount of companies' profits and indirect influence is limited to creating conditions for the development of enterprises. The amount of revenues from this source, however, depends greatly on the economic situation of a country, region, etc.

- Revenues from the management of assets owned by the local government. In this case, as in the first group, where a lower realization of revenue results from causes attributable

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[1] Excl. sale of assets.

to the units of local self-government – bidding rental and the lease of property, setting the price of the property, or that which did not border on the side of self-government – problems with the regulation of rent.

- Irregular revenues: revenues which are difficult to plan because of their irregularity and no impact on the amount of revenues – donations, inheritances, bequests, interest, penalties, fines, tax on civil law transactions, inheritance tax, etc.

In the period of 2004–2014, the share of own-source revenues in large cities fluctuated on average in the range of 60%–70% of the total revenues and the own-source revenue of local government units accounted for, in the same period, 35%–40% of the total revenues. These proportions are not found in any other group of local government units in Poland. What is more, even against the average value for the OECD countries, the share of non-transfer revenues in Polish cities stands out greatly [OECD, 2013]. At the same time, the scale of activity reflected, among others, by the amount of funds they manage, is the largest. In 2014 the cities implemented almost 44% of own-source revenues of all local government units and approx. 35% of the total revenue.

Cities were granted a taxation power in various scopes. It refers to those taxes that are local in nature. By restricting the concept of own-source revenues to local taxes, it can be indicated that they are such taxes which are transmitted in its entirety and indefinitely governments should have a relationship with the local economic base, and the local government through economic activation of the region should affect their growth, and demonstrate a significant level of autonomy of local governments in the establishment of this source of revenues [Denek et al., 2001]. While the first two qualities are not in doubt and implemented by the Polish tax system, two other features require commenting. The impact of local government on the tax base is indirect in any case but is more important in systems based on income tax and tax on property values. In such situations, it can be described as market factors affecting the amount of tax revenue.

The main revenues of large cities, individually the most efficient, with the highest share in own-source revenues are personal income and property taxes. Participation of the former in own-source revenues accounted for approx. 40%, and the latter – less than 20%. The essential difference between the two taxes is the possibility of adjusting the revenues from them; it exists only in property tax, while in the case of personal income tax it can be affected merely indirectly (as in the case of corporate income tax). Income taxes are related only to the tax base in a particular city. Those revenues should, therefore, be seen as transfers from the general state budget, rather than the actual own-source revenue. It should be noted that due to the lack of the ability to regulate certain elements of the structure of taxes, some of the other taxes collected in the budgets of local government, such as inheritance tax, will not be compatible to qualify with the definition of own-source revenues but their fiscal significance is significantly lower than income taxes.

The high share of income tax is related to the phenomenon of the 'marketization of municipal budgets' [Lubińska, 2005], i.e. the phenomenon of a strong reliance on local government budget revenues from the income of business entities – individuals and businesses. The result

of this is, firstly, a considerable regional variation in the amount of local government revenues, and secondly, increasing the financial strength of those local governments that are urban.

User charges in Poland can be collected in three types of public funds (budget, local government budgetary establishments and separate accounts of revenue) and one private – a municipal company. In the budgets, revenue from the provision of the services of social nature, such as kindergartens, nursing homes, and also in recent years, public transport, are collected. Revenues from services of technical nature, such as water supply and sewage, heat power or social housing are usually separated financially and organizationally in companies. The vanishing form and fund are the government budgetary establishments, performing in some cases the tasks of housing and utilities, but at the discretion of local authorities; these tasks can be carried out by budgetary units. Educational units can run own-revenues accounts, which are supplied mainly with charges from parents for catering students. In the case of services provided by a city, there are legal restrictions in setting the level of user charges for the use of them. This applies, inter alia, to user charges for kindergartens or a stay in a nursing home. Fees, on the other hand, supply mainly the budget and are benefit-like taxes (e.g. market fees) or fees for administration procedures. In this paper only budget revenues will be considered.

In the analysed period in the cities, because of the economic situation, there rapidly evolved various categories of revenue. According to the guidelines of Musgrave [1983] for local government financial systems, the revenues should have a relatively high stability. The stability of the revenues should, therefore, be tested against changes in the real economy. The question that arises is about the purpose and how municipalities manage to keep their own income to the desired level.

The answer to the first question is relatively obvious and involves the replacement of lost revenues from income taxes, these will be developed later. The answer to the second question, about the instruments, is directly linked to the issue of revenues self-sufficiency of cities, in the simplest terms – the regulation of certain elements of taxes and other own-source revenues in order to achieve higher revenues.

Tax revenues are the largest part of revenues. Whatever, therefore, the design of fees and user charges, it is extremely difficult to achieve a sufficiently high share. What is more, not always is the introduction of user charges justified by the nature of the service. The most important factor when deciding to introduce them is the nature of the benefits referenced by the payer or the user. According to the pyramid charges and balancing costs when the benefits are collective, even if the introduction of fees was technically possible, this should not have happened [City of Fort Lauderdale, 2008]. The user charge is associated with benefit from the public entity, and only when the user takes on the provision of individual characters with a value similar to the amount of the user charge, is it justified to charge. Fees, on the other hand, are usually tax-like.

User charges in the Polish local government can be both budget revenues or revenues of subordinated entities. They were implemented mainly in such local services as public transportation, nursing homes, kindergartens, housing, etc. On average, they account for 9.7%, while fees – for 11.8% of operating own-source revenues in large cities (2014).

It does not change the fact that the revenues from user charges in cities in Poland are characterized by high dynamics. In the 2004–2014 period, the average fees and user charges per capita in nominal terms increased by 220%, while tax revenues by only 90%. Real growth amounted to 156% and 49%, respectively. It should also be noted that there is another trend in own-source revenues, which supports the general trend – the tendency to use the instruments of the taxation power. In the analysed period, in per capita terms, the financial impact (unearned revenues) to use the taxation power remained at a similar level, but taking into account the growth of tax revenues, it clearly can point to the fact that the cities intentionally try to maximize revenues and, therefore, minimize the effects of governance. In the analysed period, the financial impact of taxation power fell from over 10% to approx. 6.5% of the executed revenues. Similarly, in the case of revenue from fees, a significant increase in revenues can be seen, but in this case one should take into account the fact that the revenues from them are largely the result of centrally fixed rates.

Data on tax revenues and the revenues from fees thus attest to the fundamental trend visible in the Polish cities – maximizing revenues. These effects are consistent with the model of Leviathan [Buchanan, 1980]. The rationale behind this trend is the other significant group of own-source revenues of cities, i.e. share of personal income tax and corporate income tax. During the studied decade, the revenue from PIT (similar in size to the total revenues from taxes and fees) grew at a low rate, and in some years the growth was negative. On average, during the decade this revenue almost doubled. In the case of revenues from CIT, due to the changing tax base, throughout the period considered they increased by only 30%. Taking account of the need to collect higher revenues due to expenditure needs, and the slower performance of the shares in income taxes, the cities pursue a policy of increasing the income of their own, which has a shaping influence. With such an activity, own revenues during the analysed decade nominally doubled, and the average annual growth was 7.3%.

## 3. Factors affecting user charges revenues

The hypothesis in this research is as follows: large cities in Poland use fees and user charges to substitute for other own-source revenues.

In order to carry out the analysis, I assume that large cities in Poland substitute lower revenues from productive sources, i.e. local taxes and share in income tax, with fees and user charges. The amount of collected revenues, if also affected by the financial impact of taxation powers, the cities are trying to minimize this effect and take into account the amount of the deficit, which is limited due to legal restrictions in this regard. Due to the limited ability to influence the amount of current revenues, a lag has been introduced in the case of income taxes. This is particularly important in the case of revenues from personal income tax, where the local authorities have no direct effect on its amount, but it is strongly linked to the economic situation of a given city. Revenues from local taxes are taken into account in the amount

with a one-year delay due to the fact that local authorities are limited in scope to regulate the amount of revenues accruing (either an increase or decrease of other revenues), but the realization of tax revenue in the previous year is the base of planning revenue for the current year. The difference in relation to the revenue from income tax is, therefore, a possibility of an impact on them. Taxation power indicates the amount of unexecuted revenues from local taxes due to the decision of the city to lower tax rates or use other instruments that reduce the overall amount of the tax burden.

A survey was conducted on data from 65 cities and towns for 2004–2014, which gives the number of observations equal to 650 (due to the delay of variables). The main source of data was budget reporting sent by cities to the Polish Ministry of Finance.

The model has been defined as:

$$CHARGES = a_1 TAXES_{t-1} + a_2 TAXPOWER_t + a_3 DEBT_{t-1} +$$
$$+ a_4 SALARIES_t + a_5 REVCAP_t + error \tag{1}$$

The dependent variable shall be CHARGES – revenues from fees and user charges in PLN. Independent variables are:
- TAXES$_{t-1}$ – revenues from taxes: property tax, agricultural tax, forestry tax, tax on civil law transactions, tax on means of transport, tax on civil law transactions, share in personal income tax and corporate income tax, in PLN;
- TAXPOWER$_t$ – amount of unrealized revenues due to a use of lowering the top tax rates, reliefs and exemptions, redemption of tax arrears, payment in instalments, and deferred payment, in PLN;
- DEBT$_{t-1}$ – local debt at the end of a year, in PLN;
- SALARIES$_t$ – yearly salaries in companies which employ more than 9 employees, in PLN;
- REVCAP$_t$ – total revenues per capita, in PLN.

Particularly important is the analysis of the coefficients for the variable TAXES. It combines both property tax and income taxes (personal and corporate). Although their construction is different, they have been present as one variable due to a very high correlation (0.9796). As indicated earlier, the characteristics of property tax is associated with the impact of local government on tax rates. These authorities have a limited legal ability to influence the rates of local taxes and other structural elements. Its coefficient indicates two very important pieces of information. Income taxes are weakly dependent on local authorities, and to a greater extent reflect the economic situation of a city. The lack of a chance to impact this variable causes a time delay associated with the response to the changes in the revenues. Income taxes are individually the highest revenue group, so their loss or increased height has a relatively greater impact on the dependent variable.

Variable TAX-POWER takes into account the financial implications of the use of all instruments through a city's taxation power, i.e. unexecuted revenues. It is assumed that a city leading

a conscious tax policy rationally uses these instruments, but considering the financial targets, it compensates for lost revenues in this way, being additional revenues from other sources.

Studies show that salaries (variable SALARIES) are like in the case of ordinary goods and services where flexibility is significant, so higher wages are associated with higher user charges, because they are more easily acceptable by beneficiaries, or the demand is higher. The limitation of the selection of this variable is that it illustrates an average salary, rather than an average household income, which would be more reasonable, but it is dictated by the availability of data.

Variable DEBT is country specific. In Poland there is a debt limitation for local government that in the past was based on a 'debt-to-revenues' ratio, and now is based on 'operating surplus-to-revenues' and 'debt repayment-to-revenues' ratios comparisons. In both cases a positive correlation of the DEBT variable and CHARGES (as an additional source of revenues) will confirm that one of the reasons for increasing fees and user charges is maintaining the debt ratio at an appropriate level.

Variable REVCAP – motivation for the introduction of this variable is the overall financial situation of big cities. They are social, economic and political centres, and thus need financial sources to perform tasks. It has been indicated in the literature review that the introduction of fees is a way to diversify cities' revenues. The variable measures the relation of a city's total revenues in a specific year to the number of citizens living in the city at the end of the year.

Expected direction of the correlation between a dependent and independent variable is presented in Table 1.

**Table 1. Expected direction of correlation**

| Variable | Direction | Source |
|---|---|---|
| TAXES | Positive | • From 1987 to 1997, reliance on user changes continued to increase steadily, but overall revenue diversification appears to have slowed [Hendrick, 2002]<br>• (…) less diversification among towns compared to states and municipalities because of a sustained reliance on property taxation over time [Carroll, Johnson, 2010]<br>• The incentive to impose user charges is larger, the higher the intensity of tax competition measured by the number of countries competing over mobile capital [Huber, Runkel, 2009] |
| TAXPOWER | Positive | • Implementation of user charges is motivated by limiting taxes and expenditures [Sun, Jung, 2012] |
| SALARIES | Positive | • User charges for kindergartens rise simultaneously with household income but decrease with municipal revenues. User charges for elderly and disabled care rise simultaneously with household income [Aaberge, Langøren, 2006]<br>• Revenues variation is dependent on many factors among which the most important is household income [Carroll, 2009] |
| DEBT | Positive | • Polish law on public finance[2]<br>• Dynamics of changes in the level of revenues is important for the level of a new debt ceilings [Werwińska, 2014]<br>• Maintaining lower tax rates can continue to be a problem more important than issues related to the financing costs of debt service. However, in the future, due to the increasing debt of local government, the situation may change in this regard [Ciupek, Kania, 2015] |
| REVCAP | Positive | • The model presumes that governments maximize revenues from whatever sources of taxation are made available to them constitutionally [Buchanan, 1980]<br>• Empirical results provide strong support for the hypothesis that a more diversified revenue structure generates more revenues than one which relies primarily on property tax [Chernick et al., 2011] |

Source: own study.

Table 2 presents descriptive statistics for the indicated variables and Table 3 correlation coefficients between them.

**Table 2. Descriptive statistics**

| Variable | Mean | Std. Dev. | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| *CHARGES* (in 000 PLN) | 83 008 | 203 271 | 27 132 | 3 183 | 1 990 319 |
| *TAXES* (in 000 PLN) | 10 204 | 8 553 | 8 101 | 0 | 77 671 |
| *TAXPOWER* (in 000 PLN) | 40 560 | 10 673 | 39 952 | 20 338 | 97 453 |
| *DEBT* (in 000 PLN) | 194 139 | 247 762 | 117 402 | 36 046 | 1 777 972 |
| *SALARIES* (in PLN) | 4 220 | 1 372 | 4 108 | 1 629 | 9 564 |
| *REVCAP* (in PLN) | 375 292 | 768 938 | 170 819 | 31 364 | 8 573 940 |

Source: own calculations on the basis of budget reports 2004–2018.

**Table 3. Correlation coefficients**

| *TAXES* | *TAXPOWER* | *DEBT* | *SALARIES* | *REVCAP* | |
|---|---|---|---|---|---|
| 1.0000 | 0.4397 | 0.9118 | 0.3786 | 0.3495 | *TAXES* |
| | 1.0000 | 0.4668 | 0.1883 | 0.1335 | *TAXPOWER* |
| | | 1.0000 | 0.4019 | 0.3964 | *DEBT* |
| | | | 1.0000 | 0.7922 | *SALARIES* |
| | | | | 1.0000 | *REVCAP* |

Source: own calculations on the basis of budget reports 2004–2018.

Results of the regression have been presented in Table 4. Two estimation methods have been used – OLS (ordinary least squares) and fixed-effect panel regression. In both cases the most important variable turned out to be $TAXES_{t-1}$, $TAXPOWER_t$ and $DEBT_{t-1}$. The least important is $REVCAP_t$ – it is not statistically significant.

**Table 4. Regression results**

| | OLS | | FE | |
|---|---|---|---|---|
| $TAXES_{t-1}$ | 0.1762*** (0.0034) | | 0.2401*** (0.0068) | |
| $TAXPOWER_t$ | −1.0630*** (0.1320) | | −0.2258 (0.1745) | |
| $DEBT_{t-1}$ | 0.1232*** (0.0037) | | 0.1187*** (0.0037) | |
| $SALARIES_t$ | −268.31* (150.32) | | −649.05** (271.38) | |
| $REVCAP_t$ | 1 164.01 (1 190.80) | | 970.19 (2 002.30) | |
| *const* | −3 328 180 (4 397 830) | | −16 721 800 (4 875 110) | |
| | R-squared | 0.9800 | LSDV R-squared | 0.9882 |

Source: own calculations on the basis of budget reports 2004–2018.

One of the most important considerations is the relationship between the CHARGES and TAXES$_{t-1}$ variables. It has a positive sign, which is in line with expectations, as despite higher tax revenues in the previous year cities look for non-tax revenues, in this case fees and user charges. Additionally, it should be emphasized that this results from the fact that both CHARGES and TAXES grew in the analysed period, but the dominant taxes included in this variable were characterised by different dynamics. Revenues from personal income tax for most of the period increased due to the reduced amount, which was a result of the economic crisis, but that was not the case of revenues from local taxes (among which property tax has a dominant meaning) due to the much more stable tax base. In real terms, revenues from PIT increased in the period 2004–2008, and later from 2010. In fact, the observation of data on the revenues (in constant prices) in the considered period shows that revenues from user charges increased throughout the period, while revenues from local taxes remained stable.

In contrast to what was expected is that there is a negative relation between CHARGES and TAXPOWER – the higher the amount of effects of taxation power, the lower the revenue from fees and user charges. A positive direction would suggest that large cities pursue a conscious revenue policy, i.e., compensate for lost revenues from one source with revenues from a different one. It could be assumed, therefore, that the aim is the budgetary expenditure that is necessary and needed to be incurred or deficit and revenues are created in such a way as to achieve this goal. Revenues from fees and user charges which, as a single revenue group, have a significant potential, seem to be a natural choice. The negative relationship in the model results from the use of taxation power. As it is shown in Table 5, the financial effects of this power, on average, are decreasing. This also suggests that cities are willing to use these instruments less and hence gain additional revenues.

It is worth underlining that the changes, in contrast to other statistically significant variables, occur concurrently with changes in the taxation powers. This is because both elements, as opposed to revenues such as the share of personal income tax, are the ones that local authorities plan, i.e. they are the result of the conscious decisions of local authorities for the next financial year. This applies in particular to taxation power, as the decrease in local tax rates or the introduction of additional incentives and exemptions takes place at the stage of budget planning.

In the analysed period the structure of instruments of taxation powers used by the cities was not substantially changed, but, as mentioned, the financial effects were decreased (cf. Table 5). These instruments can be divided into two basic groups: those whose use requires acceptance of the decision-making body, and those that are used directly by the executive body. A similar division refers to the nature of the instrument used: it is systemic in nature, or individual. The first group includes: lowering the top tax rates and the introduction of incentives and exemptions, and the second – a cancellation of tax arrears, payment in instalments and deferred payment. Besides the initial years, the structure does not change significantly and is dominated increasingly by system instruments, accepted by the decision-making body. It can be indicated that in absolute terms these effects remain relatively stable, the consequence of which is the

declining share of the financial impact of the power to tax. What is more important in this case are the most widely used solutions, i.e. the reduction of upper tax rates. Within a decade, they increased on average by only 35%, so this is another argument indicating a conscious policy of cities aimed at collecting the highest income tax.

**Table 5. Effects of taxation power in large cities in Poland (% of operational own-source revenues)**

|  | The effects of lowering the top tax rates (%) | The effects of reliefs and exemptions (%) | The redemption of tax arrears (%) | Payment in instalments, deferred payment (%) |
|---|---|---|---|---|
| 2004 | 1.70 | 1.89 | 0.00 | 0.00 |
| 2005 | 1.63 | 0.96 | 0.00 | 0.00 |
| 2006 | 1.55 | 0.32 | 0.37 | 0.31 |
| 2007 | 1.41 | 0.29 | 0.39 | 0.29 |
| 2008 | 1.25 | 0.32 | 0.19 | 0.21 |
| 2009 | 1.37 | 0.39 | 0.25 | 0.25 |
| 2010 | 1.39 | 0.41 | 0.29 | 0.22 |
| 2011 | 1.54 | 0.38 | 0.18 | 0.16 |
| 2012 | 1.25 | 0.36 | 0.12 | 0.16 |
| 2013 | 1.21 | 0.38 | 0.11 | 0.16 |
| 2014 | 1.19 | 0.26 | 0.14 | 0.15 |
| 2015 | 1.28 | 0.40 | 0.10 | 0.12 |
| 2016 | 1.04 | 0.30 | 0.00 | 0.06 |
| 2017 | 0.99 | 0.26 | 0.00 | 0.07 |
| 2018 | 1.05 | 0.23 | 0.00 | 0.05 |

Source: own calculations on the basis of budget reports 2004–2018.

The question which arises is why the cities with lower tax revenues still decide to use the power taxation, represented by the TAXPOWER variable. The natural procedure would be to avoid the use of this instrument, and thus the effect on the budget would be positive. This kind of decision would be logical, and indeed in the analysed period the effects of taxation power were relatively lower, but it should be noted that due to social or economic reasons this instrument will continue to be used. Lower tax rates may concern e.g. business entities, or some social groups, which is always a political choice. The substitution of revenues lost in this way is thus shifting the tax burden to another group of citizens, the implementation of additional goals such as a higher degree of balancing the cost of the service for which the user charges were introduced.

Both relationships are, therefore, consistent with each other, because in both cases cities are trying to generate additional non-tax revenue in place of the lower or deliberately lost tax revenue.

As expected, the $DEBT_{t-1}$ variable is positively correlated with CHARGES, which means that one of the reasons for increasing fees and user charges is maintaining the debt ratio at an appropriate level.

Surprisingly, the SALARIES variable is negatively correlated with CHARGES (using both OLS and FE). The expected direction of the correlation was positive, which would be consistent with previous studies and theories on user charges. There is, however, an explanation. In Poland, as mentioned earlier, one of the most important sources of revenues for cities is the share in personal income tax. The higher the salaries, the higher the revenues, hence cities where the average salary is higher do not need to charge citizens with fees and user charges. It also suggests that there are economies of scale in cities.

Total revenues per capita, REVCAP, are the most uncertain variable for two reasons. Firstly, it is not statistically significant in both the OLS and FE methods. Secondly, the direction of the relationship is opposite. Additionally, the variable has the highest coefficient of variations of all variables.

## 4. Revenue policy changes

In order to confirm the changes made in the policies of cities in Poland, an additional test has been conducted. In this method changes in revenues per capita will be shown. Each city is characterized by two variables: fees and user charges per capita and own-source revenues (excl. fees and user charges) per capita. The combination of these two features allows determining the applicable revenue policy on fees and user charges. Therefore, cities can apply the following 4 types of revenue policy.

1) High revenues from fees and user charges and a low operating own-source revenues policy;
2) High revenues from fees and user charges and a high operating own-source revenues policy;
3) Low revenues from fees and user charges and a low operating own-source revenues policy;
4) Low revenues from fees and user charges and a high operating own-source revenues policy.

The method adopting the normalization of indicators of efficiency and effectiveness is based on the concept of benchmarking, i.e. a comparison with the best. A question that needs to be answered is whether a city implements the policy of increasing revenues from fees and user charges to a greater extent than in the case of other operating own-source revenues. If the city uses fees and user charges as an instrument of revenue gathering, then comparing to other cities it has a high fees and user charges per capita ratio (policy 1 and 2), but if not – it has a low ratio (policy 3 and 4).

For the purpose of carrying out the analysis the normalization quotient mapping, according to the following formula, has been made:

$$FUC = \frac{fees.user.charges_i}{MAX\left(fees.user.charges\right)} \qquad (2)$$

where:
- fees.user.charges$_i$ – fees and user charges per capita in $i$-city;
- MAX (fees.user.charges) – maximum fees and user charges per capita for cities, per annum.

Analogous index normalization for OOR (operating own-source revenues) has been made with the use of the formula:

$$OOR = \frac{oor_i}{MAX(oor)} \tag{3}$$

where:

- $oor_i$ – operating own-source revenues (excl. fees and user charges) per capita in i-city;
- MAX (oor) – maximum operating own-source revenues (excl. fees and user charges) per capita for cities, per annum.

In order to carry out research operating own-source revenues are considered as all operating revenues, excluding grants, subsidies and revenues from international support. Additionally, in order to maintain the methodological correctness of this group, revenues from fees and user charges have been excluded.

Given that revenues from user charges are not a dominant source of operating own-source revenues, it must be held that the policy of high operating own-source revenues is consistent with the theory of Leviathan.

**Table 6. Number of cities with different types of fees and user charges policies**

| | | 2004 | | | | total |
|---|---|---|---|---|---|---|
| | Fees and user charges (FUC) | low | low | high | high | total |
| | Operating own-source revenues (OOR) | low | high | low | high | |
| 2018 | low / low | 7 | 7 | 3 | 7 | 24 |
| | low / high | 4 | 1 | 1 | 2 | 8 |
| | high / low | 2 | 0 | 1 | 5 | 8 |
| | high / high | 9 | 2 | 5 | 9 | 25 |
| | total | 22 | 10 | 10 | 23 | 65 |

source: own calculations on the basis of budget reports 2004–2018.

The results of the analysis have been presented in Table 6. It clearly shows that in general the revenues policy among large Polish cities did not change during the research period, only small changes in the number of cities with certain revenue policies changed. Therefore, the results bring two important conclusions. Firstly, in relative terms, in all the cities the two groups of revenues grew at a quite similar pace. Secondly, the small changes that can be visible are focused on two opposing directions – the policy of high revenues (both fees and user charges and other operating own-source revenues) and the policy of low revenues, leaving the mixed policies unpopular. In the context of the research, the first conclusion is more important – it confirms that cities use fees and user charges to gain new revenues and not to substitute each other.

# Summary

For the purposes of the model, it was assumed that most of the revenues (due to the participation of the own-source revenues and total revenues), depending on the factors shaping them, affect other sources of revenues, while the cities tend to seek additional revenues depending on the changes in the most efficient sources. The research has shown that in large Polish cities there are two important trends in own-source revenues. One is that fees and user charges are gaining importance in own-source revenues – their dynamics in the analysed period is much higher than the dynamics of the most important own-source revenues such as the share in personal income tax or property tax. It also has to be emphasised that cities stay quite stable in terms of fees and user charges vs. other own-source revenues dichotomy, but it should be underlined that the number of cities with low fees and user charges and low other own-source revenues, and those with high fees and user charges and high other own-source revenue is getting bigger, while the number of mixed-policy is getting lower.

On the other hand, the model shows that fees and user charges negatively relate to taxation power and are positively related to revenues from taxes. This clearly shows that large Polish cities maximize their revenues in certain conditions. They use less taxation power while increasing revenues from fees and user charges, and although they gain more revenues from taxes, they still increase fees and user charges. One possible explanation, which partly has been taken into consideration in the model, is investment policy. In the model a variable that describes the amount of cities' debt has been included, and many cities use debt to finance part of those investments which are co-financed by European Union funds. What is more, local government investments will entail operational expenditures in the future, therefore, cities need more revenues than they did before. While having a limited ability to impose new taxes, they use tax-like instruments – fees, and increase user charges in order to balance expenditure for certain services.

## Footnotes:

[1]  Large Polish cities are cities which perform the tasks of municipalities (the lowest level of local government) and counties (middle level) and gather revenues assigned to both levels. There are 65 of them.

[2]  According to the Polish law on public finance, the maximum ratio debt and interest repayment to total revenues in local government depends on the 3-year average of operating surplus to the total revenues ratio from previous years. Hence, building the operating revenues base allows for taking more loans or repaying more debt in the future.

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