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Impact of local government revenue structure on income growth and employment in Croatia

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Impact of local government revenue structure on income growth and employment in Croatia*+

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Abstract

The paper researches effects of local government revenue structure on income growth and employment in Croatia. The results confirm highly positive and significant effects of personal income taxation. This differs dramatically from the previous research based on central government level, which show that property and consumptions taxes are growth-friendly. The most probable explanation of such results could be in narrow revenue structure defined by the vertical fiscal equalisation and the fact that particular local revenue structure does not affect competitiveness in the same way as overall revenue structure of the country.

Keywords: local government, revenue structure, Croatia, income growth, employment, panel data

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1. Introduction

Fiscal crisis and consequential fiscal consolidation policies that came from „austerity policy doctrine“ make issues of taxation and tax structure policies as one of the major themes of the research in the field. Discontent of the voters by fiscal policies that aim towards rising taxes or reducing public spending has directed public debate and research towards issues of public sector efficiency. This quest for efficiency inspires debates on needs for general public sector reforms, reforms of territorial-administrative organisation, reform of intergovernmental fiscal relations, general tax reforms and changes of the tax structure at the local government level as well.

In order to understand how favourable structure of local taxes raises economic efficiency we have to relate several important notions from the economic theory. Firstly, it is important to start with so called ‘decentralisation theorem’ derived from Oates (1972) which states that realisation of public functions, or delivery of public goods and services, should be organised by the level of government which has the most of information about needs of citizens for that particular function. This is the cornerstone idea about allocative efficiency, which is optimal if system of fiscal decentralisation follows such rule for sharing responsibilities across public sector. However, this is not enough to enjoy benefits of decentralisation. In order to be able to implement their superior knowledge about local goods and services, local governments have to be autonomous. We determine the level of autonomy mostly by vertical fiscal equalisation, i.e. system of division of taxes between levels of government. The crucial point is that local government controls its revenues and can perform precise planning of their dynamics in future. In such circumstances, local decision-making can fully use their higher level of efficiency in spending of local public goods and services.

Besides these issues, local government revenue efficiency also relates to questions of tax collection, perception of taxation burden (where direct taxes impose more discomfort to the voters) and elasticity (ability to collect more revenues per unit). In short, the idea is to collect same level of revenues by, as low as possible, tax burden of the voter. Recent research supports the idea that there are tax forms more favourable for growth and employment and most of the research emphasises efficiency of property and consumption taxes (i.e. Arnold, 2008; Arnold et al., 2011 and Johansson et al., 2008).

As previously mentioned, the empirical literature on effects of tax structure of economic growth at the general (or central) government level, due to the abundance of such data, is rising exponentially. However, there are not many studies about revenue (tax) structure effects at the local government level. This paper tries to fill this gap. The dataset of Croatian Ministry of finance provides rich source of data where we can test effects of different tax form on income and employment growth. The lack of data on the local level is one of the main reasons why there are not many empirical papers on this topic. In addition, two questions arise at the local level. First of them is whether taxation on local government level affects growth at all? If the level of centralisation in particular country is very high, most likely revenue structure at the local level is not that important. Second question is whether there are growth effects of certain revenue structure on particular local government community. This is narrower issue, which tries to answer if local tax policies have effect on local growth regardless of the system of intergovernmental fiscal relations. This paper is more in line with the second question.

The first part of the paper, after introduction, presents brief theoretical and empirical overview. Issues of efficiency of the revenue structure at the local government level have different theoretical and empirical background than efficiency of revenue structure at general government level. This relates not just to the issues of allocative efficiency but also to problems of local government tax competition and many others. Third chapter is devoted to description of dataset and methodology of the empirical research. Fourth part provides the results of the empirical analysis and discussion. Concluding remarks offer some thoughts towards future research.

2. Theoretical framework and literature overview

Economic theory suggests that taxes affect economic systems negatively by exerting distortions that impose reduction of welfare. We can summarize all this negative effects through the idea of dead weight loss of taxation. However, in terms of economic efficiency there is a link to expenditure side of the budget where theory states that increase by additional unit of tax is justified (and, thus, loss of welfare for taxpayer) if that additional budget revenue leads to increase of marginal utility for the tax payer. Simply stated, increase of the tax burden increases welfare if benefits of public spending overcome costs of taxation. As Arnold (2008) states, distortive effects of taxation depend on two factors: the level of resources extracted from the private sector (the effects of tax level) and level of distortions imposed by utilisation of more or less distortive taxes (the tax structure). Economic efficiency in the first case relates to the stated theory of marginal utility of taxation where economically efficient public system will equalise benefits of spending and costs of taxation. The second case relates economic efficiency to the narrower field – theory of optimal taxation. The issue is to collect revenues by using the least distortive tax form. That would denote optimal tax structure.

In terms of effects of tax structure on economic growth, theoretical literature deals with several major fields of that influence. These are relation of taxation with saving and investment, effects on dynamics of employment and income (growth and distribution), effects on consumption and effects on real estate market. Of course, all these effects result on evolution of gross domestic product growth. Thus, taxation theory focuses on three most important groups of tax forms as dominant taxes within the tax structure in most of the countries – taxes on income and profits, consumption taxation and property taxation.

Taxes on income and profits mostly refer to personal income taxation and corporate income taxation. In terms of personal income taxation, research focuses on taxation of capital and labour. While the theory is uniform when it comes to the taxation of capital, stating that in long term this tax should be zero (Chamley, 1986; Diamond, 1973; Judd, 1985), there is less consensus about taxation of income from labour where same authors conclude that the utilisation of the latter has positive effects. A number of empirical papers argue that both taxation of income and capital affect growth negatively (Bull 1993; Devereux and Love, 1994, 1995; Jones et al., 1993, 1997; King and Rebelo, 1990; Milesi-Ferretti and Roubini, 1996; Pecorino, 1993; Rebelo, 1991; Stokey and Rebelo, 1995). The main arguments of negative effects are that taxes on capital reduce returns on savings and income taxes result with substitution effects between work and leisure.

The main argument, which supports more consumption taxes within the tax structure, is that consumption taxes are least distortive for savings, investment and taxpayer decisions (Abel and Blanchard, 1983, Auerbach and Kotlikoff, 1987; Itaya, 1991; Summers, 1981). Chang (2006) and Futagami and Doi (2004) also find positive effects of consumption taxes on growth

through increase of capital and allocation of labour from capital goods production towards activities of research and development. On the other hand, Devereux and Love (1994) and Milesi-Ferretti and Roubini (1998) argue that consumption taxes reduce long-term rate of growth by reducing the market labour supply.

Property taxes have advantages that stem from the fact that these taxes are the most immobile among all other tax forms. Thus, the tax base and tax revenues are stable and revenues are much more predictable due to less frequent fluctuations of property values than it is the case with revenues from income or profit (Boadway et al., 2009; Johansson et al., 2008; Joumard and Kongsrud, 2003). In addition, tax base is highly visible and tax evasion is more difficult. Immobility of tax base is more and more relevant in the context of increased tax competition processes globally. However, taxation of property can also exert significant distortions if it relates to property used for business purposes.

One of the first papers that deal with effect of tax structure on economic growth used dataset on OECD countries finds highly negative correlation of share of revenues from personal and corporate income tax and GDP growth rate (Plosser, 1992). Afterwards, many authors research effects of both tax level and tax structure on economic growth but obtain different results, which do not provide clear-cut conclusions (Bleaney et al., 2001; Dowrick, 1993; Gentry and Hubbard, 2000; Kneller et al., 1999; Leibfritz et al., 1997; Padovano and Galli, 2002; Widmalm, 2001). Research that is more recent shows positive effects of changes in tax structure from income taxation towards consumption taxation (EC, 2008 and Myles, 2009a, 2009b). Finally, the most influential paper related to effects of tax structure on economic growth belongs to Arnold (2008) and basis on dataset of 21 OECD economies in period 1971-2004. He finds that income taxes (corporate taxes in particular) are generally associated with lower economic growth than taxes on consumption and property. In addition, he finds that least negative effects on economic growth belong to property taxes and consumption taxes. Studies of Arnold et al. (2011) and Johansson et al. (2008) confirm similar results.

None of all these theoretical and empirical research do not deal with effect of subnational government tax structure. This comes only marginally from theoretical prescription that revenues from taxation of less mobile tax basis should belong to the local level. Nevertheless, the theory of optimal taxation at the local level is developed quite well while the lack of empirical research in this field results mainly from the lack of data.

As discussed above, issue of effects of subnational tax structure on growth has somewhat different theoretical and empirical background from general or central government level viewpoint. The theory of fiscal federalism mostly developed by Oates (1972) state clear benefits of allocative efficiency that come from already mentioned “subsidiarity theorem”. One of the crucial points that enable to grasp benefits of such efficiency is relation of local government representatives and taxpayers. Local government representatives have incentives for high level of responsibility if there is a more direct link between their decisions and taxes paid by the local voters. This connection strengthens by more local autonomy, i.e. financial independency of local governments from central government level. ‘Unless local governments are able to some extent alter significantly the level and composition of their revenues, neither local autonomy nor local accountability is very meaningful’ (Bird 2011: 15). Therefore, the theory of subnational taxation proposes utilisation of real subnational taxes that have the following features (Bird, 2011): subnational governments can decide whether to levy the tax or not, they can determine the precise tax base, they can decide on the tax rate, they administer the

tax (assessment, collection and enforcement) and they keep all revenues collected. However, in practice, there are rare local taxes that comply with all these criteria.

Table 1 presents the main local government taxes as percentage of total tax revenues of local governments in OECD countries. We can observe that two major tax forms finance subnational government in selected dataset. This is personal income tax and property tax. Property taxation is present in all of the OECD countries, which show that practice follows theoretical prescriptions about property taxation as the most appropriate local tax. Personal income tax on the other hand is not that frequent but in many countries, it is main source of subnational budget revenues. Other taxes, with few exceptions, are not that relevant for the subnational public sector.

Since the tax structure at the local level favours direct taxes and, in practice, mostly basis on revenues from personal income tax and property tax, in terms of economic efficiency this makes subnational government tax structure favourable in the light of the empirical results of recent papers on relation of tax structure and economic growth. Of course, in case of centralised economies, this question is irrelevant, but for more decentralised systems, this would mean that decentralisation leads to allocative efficiency benefits from higher level of decentralisation and also economic efficiency that stems from fiscal autonomy at the local level gained by favourable tax structure (more related to direct taxes - personal income tax and property taxation). This would also mean that changes of tax structure towards increasing the share of property taxation should follow efforts towards higher level of decentralisation.

Table 1: Main local government taxes as % of total tax revenues of local governments in OECD member states and Croatia

	PIT and CIT	**PIT**	**CIT**	**Property taxes**	**General taxes**	**Specific goods and services**	**Taxes on use of goods**	**Other taxes**
Chile	0,0	0,0	0,0	41,7	0,0	16,4	41,9	0,0
Czech Republic	0,0	0,0	0,0	55,8	0,0	1,4	42,7	0,0
Denmark	89,3	87,3	2,0	10,5	0,0	0,1	0,0	0,1
Estonia	89,8	89,8	0,0	7,9	0,6	0,4	1,2	0,0
Finland	93,3	87,1	6,2	6,6	0,0	0,0	0,0	0,1
France	0,1	0,0	0,0	51,6	0,0	20,7	3,4	24,2
Greece	0,0	0,0	0,0	95,8	0,2	3,3	0,8	0,0
Hungary	0,0	0,0	0,0	20,1	68,3	1,1	10,5	0,0
Iceland	82,0	82,0	0,0	17,6	0,0	0,0	0,4	0,0
Ireland	0,0	0,0	0,0	93,8	0,0	0,0	0,0	6,2
Israel	0,0	0,0	0,0	94,8	0,0	0,0	5,2	0,0
Italy	24,9	23,2	1,7	16,0	5,6	9,6	8,1	35,7
Japan	50,0	34,5	15,5	29,4	7,4	6,9	5,1	1,1
Korea	17,7	9,8	7,9	44,4	5,6	7,7	12,4	12,3
Luxemburg	91,3	0,0	91,3	6,8	0,0	1,2	0,2	0,4
Netherlands	0,0	0,0	0,0	52,4	0,0	1,8	43,6	2,2
New Zealand	0,0	0,0	0,0	90,4	0,0	0,7	8,9	0,0
Norway	87,9	87,9	0,0	10,7	0,0	0,0	1,4	0,0
Poland	59,4	48,4	11,0	30,4	0,0	0,0	6,9	3,3
Portugal	29,5	19,4	10,1	45,1	11,8	6,7	6,0	0,9

Slovak Republic	0,0	0,0	0,0	52,1	0,0	1,8	22,2	23,9
Slovenia	78,5	78,5	0,0	15,3	0,0	3,5	2,8	0,0
Sweden	97,3	97,3	0,0	2,7	0,0	0,0	0,0	0,0
Turkey	17,1	17,1	8,9	14,0	24,9	22,3	2,2	10,6
United Kingdom	0,0	0,0	0,0	100,0	0,0	0,0	0,0	0,0
Unweighted average	**36,7**	**30,5**	**6,2**	**40,2**	**5,0**	**4,2**	**9,0**	**4,8**
Croatia	**78,68**	**78,68**	**0**	**16,13**	**0,72**	**0**	**4,40**	**0,07**

Note: PIT – personal income tax; CIT – corporate income tax

Source: OECD (2014) Revenue statistics 1965-2013, (Paris: OECD Publishing), doi: http://dx.doi.org/10.1787/888933165102; Ministry of finance (2015) Annual Report for 2014, Zagreb, p. 153.

The question is whether the empirical research on tax structure at subnational level follows theoretical and practical evidence on appropriate tax structure. As previously mentioned, the research on this issue at the local government level is quite limited – the focus of research is on effects of decentralisation on growth. Helms (1985), Mofidi and Stone (1990), Schunk and Porca (2005), Stansel and Swaleheen (2008) and Clarke and Miller (2014) study specific issues in the field. Helms (1985) and Mofidi and Stone (1990) focus on impact of tax level and find negative effects of state and local taxes on economic growth. Schunk and Porca (2005) focus on examination of effects on business cycles on state and local government revenue diversification – negative effects of revenue instability. Stansel and Swaleheen (2008) take broader approach and examine relation of "government finance variables", meaning key items of revenue and expenditure side of the budget, and growth of real per capita income in U.S. metropolitan areas. They find negative effects of local taxes on economic growth. Clarke and Miller (2014) also study the effects of various expenditures and revenue combinations on growth in real state personal income per capita, using a sample of annual observations from 1977 to 2010 for 49 states and the District of Columbia. They argue that state and local governments underutilize corporate income taxes as a source of revenue. According to their research, changing tax structure towards more corporate income tax share would reduce market distortions caused by property taxes, individual income taxes, sales taxes, and federal tax sources. In addition, they conclude that increases in growth occur when property tax, sales tax, and other taxes together with intergovernmental revenue decrease which is contradictory to the empirical evidence using datasets at the central government level.

While empirical research on effects of tax structure on economic growth at the national level has quite voluminous and provides more uniform results, the lack of research on the same issue at subnational level does not enable enough evidence for more clear conclusions. In the following chapters, the Croatian case will be presented.

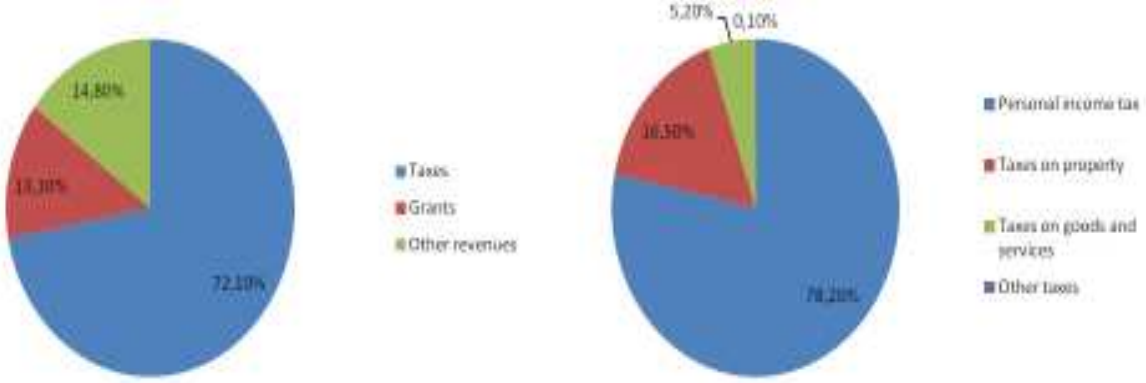
3. Data and methodology

The main data source used is Ministry of finance database that contains unconsolidated budget data for 555 Croatian local governments in the period from 2004 – 2013. We derive all data related to budget revenues from this database. Data for employment and income are from the database of Tax Revenue Service of the Ministry of Finance. Data on share of high school graduates in active labour force and population come from Central Bureau of Statistics.

It is important to note that Croatia is one of the most centralised European countries and most of the revenues come from the central government level wither through joint taxes or grants. Two forms of taxes belong to the joint taxes shared by each level of government. These are personal income tax and real estate transfer tax. In addition, there is five city or municipal taxes, namely: surtax on income tax, consumption tax, tax on holiday houses, tax on trade name, tax on the use of public land. In addition, it is important to mention communal fees and contribution as a non- tax revenue due to earmarking for spending in investment and maintenance of communal infrastructure. Out of these revenue sources, it is important to mention that only surcharge on income tax (where local government can set the rate within range given by the central government, which is size dependent) and communal fees and contribution are revenue sources under certain control of local government. Central government sets other forms or they are under control of local government but have negligible revenue effects.

Figure 1 presents the structure of total revenues of 53 local governments in Croatia. Because budget consolidation demands high capacity and number of local governments in Croatia is relatively large, Ministry of Finance consolidates budget only for 53 large cities and counties. Most of the revenues come from taxes, dominantly from personal income tax. Thus, in terms of relevance to the local government budgets and potential effects on growth of income and employment we can emphasize four sources of revenue: revenues from personal income tax, revenues from communal fees and contributions, grants and revenues from property taxes. For this reasons the empirical analysis will focus on effects of these forms of revenue on growth.

Figure 1: Revenue structure of 53 local governments in Croatia in 2013



Source: Ministry of Finance (authors' calculation)

In terms of methodology, this research applies Arellano-Bond estimation (Arellano and Bond 1991) which basis on lagged values of dependent variable and use of instrumental variables (lagged dependent variables) as regressors of the independent variables. There are several reasons why this method is appropriate for the relevant set of data (see Arellano and Bond 1991: 277-297):

- within this empirical research, based on economic theory and available dataset, there is a high probability of endogeneity of dependent and independent variables. Growth of income and employment overall and growth of local income and employment affects growth of local taxes. Therefore, the causality can have bidirectional effects; within the

two-step procedure, potential correlation between dependent and independent variables is lost;

- characteristics of local government which are not related to the changes in the tax structure such as geographical, demographical and other features can be correlated with independent variables and affect validity of the estimation; this problem is resolved by differencing of the variables where these features that are not related to the time-series component of the dataset are lost;
- there is a great chance of autoregressive behaviour of lagged dependent variables, i.e. income and employment – if such features are not controlled by defining the lagged values of dependent variable as regressor, the estimation of independent variables will not be accurate (effect of regressors will be overemphasized because it will contain effects of income and employment growth from previous period which makes basic assumption of least squares method invalid);
- this dataset contains panel with short time-series dimension (T=10). Precisely due to that, it is common to lag dependent variable because the autoregressive effect in short time-series panel is significant.

In addition, due to relatively short time-series dimension using too many lags could result in loss of model efficiency due to significant loss of data. Therefore, we difference both independent and dependent variables for one year.

General form of such autoregressive model of order ρ in y_{it} with $y_{i,t-1} + ... + y_{i,t-\rho}$ as regressors, and regressors x_{it} is as follows:

$$y_{it} = \gamma_1 y_{i,t-1} + ... + \gamma_\rho y_{i,t-\rho} + x_{it}^{'}\beta + \alpha_i + \varepsilon_{it}, t = \rho + 1,..., T \qquad (1)$$

Where

y_{it} presents dependent variable (income or employment)

$x_{it}^{'}$ presents vector of independent variables (regressors), namely revenues from personal income tax, property tax, taxes on goods and services, grants, revenues from property and revenues from fees and contribution (as share in total local government revenues)

α_1 presents the panel-level effects and

ε_{it} residual value (i.i.d.) or low order moving average process

Section below presents the results of the estimation and discussion.

4. Results of empirical estimation and discussion

Table 2 and Table 3 present the results of the empirical estimation. Table 2 presents estimation of revenue structure on growth of income and table 3 on growth of employment. In both tables three specifications of the model are used – first one (model 1) contains all of the variables, model 2 presents estimation without revenues from personal income tax and third specification (model 3) focuses on main sources of local budget revenues.

The results of estimation show somewhat negative effects of taxation of goods and services and also of communal fees and services. Significant and positive effects on income growth are present only in the case of revenues from personal income tax. We can explain this can by two reasons. Revenues from personal income tax dominate all other taxes and thus, they provide main driver of growth for local governments (through budget spending) and income growth is closely related with economic activity in the local community which is expressed through growth of income (increase of wages and employment) and, thus, revenues from personal income tax. In addition, this could be sign of sensitivity of local governments to central government decision about the rates of personal income tax. In a lesser extent, local governments can increase their revenues by rising the rate of surcharge but it is highly unlikely that such rises have growth effect considering the share of surcharge in local government personal income tax revenue. Surprisingly, coefficients on revenues from property and grants are negligible. The reasons for slightly negative coefficients on revenues from fees and contributions might be due to certain level of property base competitiveness. High rates of these pseudo-tax forms in Croatia might be detrimental for investment within construction sector and could reduce benefits that come from capitalisation process which occurs when local governments use these revenues for reconstruction of communal infrastructure.

Table 2: Effects of revenue structure on income

Dependent variable: income	**Model 1**	**Model 2**	**Model 3**
Personal income tax	0,09*** (3,54)		0,09*** (23,49)
Property tax	0,00 (0,02)	0,00 (1,39)	0,00 (0,66)
Tax on goods and services	-0,048*** (-16,27)	-0,02*** (-7,64)	
Grants	0,01*** (3,54)	-0,01*** (-3,19)	0,01*** (7,33)
Revenues from property	-0,01*** (-5,87)	-0,01*** (-6,21)	
Fees and contributions	-0,02*** (-7,05)	-0,02*** (-10,31)	-0,02*** (-8,25)
Wald chi^2	23988***	2222,63***	24270***
No. of instruments	43	42	41
No. of observations	4353	4353	4358

*Note: Values in parenthesis denote z-score, significant at values *,**,***, respectively 1%, 5%, 10%*
Source: authors' calculation

Table 3 presents results of estimation of effects of revenue structure on employment growth. The results are quite similar to the estimations at the table 2. The only difference is that the coefficient on effect of revenues from personal income tax is smaller. In addition, negative coefficients of fees and contributions on employment are negligible.

Table 3: Effects of revenue structure on employment

Dependent variable: employment	**Model 1**	**Model 2**	**Model 3**
Personal income tax	0,06*** (12,46)		0,05*** (9,93)
Property tax	-0,01* (-1,73)	-0,00 (-1,02)	-0,01*** (-3,10)
Tax on goods and services	-0,03*** (-9,41)	-0,02*** (-5,34)	
Grants	0,00 (1,27)	-0,00*** (-2,68)	0,00 (1,37)
Revenues from property	0,01*** (4,45)	0,01*** (4,28)	
Fees and contributions	-0,00 (-0,68)	-0,01*** (-2,41)	0,00*** (-2,21)
Wald chi^2	1722***	1436***	1541
No. of instruments	43	42	41
No. of observations	4353	4353	4366

*Note: Values in parenthesis denote z-score, significant at values *,**,***, respectively 1%, 5%, 10%*
Source: authors' calculation

Tables 4 and 5 present results of the augmented model of effects of revenue structure on growth of income (table 4) and employment (table 5). We extend the model by inclusion of share of high school graduates in total active labour force and population. Unfortunately, there are only few time-variant variables available and the results show that both variables used are highly collinear (one of the reasons is certainly low yearly dynamics). However, both variables show that larger and more educated communities earn higher income and enjoy higher employment level. We also control for the institutional factor by disaggregating local governments to large cities (25 local governments with more than 35,000 inhabitants and county capitals), cities and municipalities. However, the results do not substantially differentiate from the basic model. We can note somewhat higher positive effect of personal income tax share and higher negative effect of taxes on goods and services on income and employment growth.

Table 4: Augmented model of effects of revenue structure on income

Dependent variable: income	**Large cities**	**Cities**	**Municipalities**
Personal income tax	0,12*** (3,99)	0,12*** (10,78)	0,087*** (17,97)
Property tax	0,00 (0,91)	-0,00 (-0,74)	-0,00 (-0,82)
Tax on goods and services	-0,075*** (-4,53)	-0,078*** (-9,93)	-0,04*** (-11,18)
Grants	-0,0055 (-0,90)	-0,00 (-1,50)	0,008*** (4,78)
Revenues from	-0,02*	-0,012***	-0,007***

property	(-1,66)	(-2,69)	(-3,76)
Fees and contributions	-0,03 (-1,58)	-0,03*** (-4,55)	-0,01*** (-5,19)
Education	1,53*** (10,03)	1,51*** (27,17)	1,39*** (44,79)
Population	0,69*** (10,03)	0,74*** (27,17)	0,74*** (44,78)
Wald chi^2	1612,84***	6012,25***	14895***
No. of instruments	43	43	43
No. of observations	216	1022	3331

*Note: Values in parenthesis denote z-score, significant at values *,**,***, respectively 1%, 5%, 10%*
Source: authors' calculation

Table 5: Augmented model of effects of revenue structure on employment

Dependent variable: employment	**Large cities**	**Cities**	**Municipalities**
Personal income tax	0,06* (1,71)	0,06*** (5,08)	0,06*** (11,87)
Property tax	0,00 (0,22)	-0,01*** (-2,61)	-0,00 (-0,60)
Tax on goods and services	0,01 (0,29)	0,00 (0,935)	-0,036*** (-9,70)
Grants	0,024*** (3,72)	0,01 (1,55)	0,001 (0,36)
Revenues from property	-0,01 (-1,08)	-0,00 (0,49)	0,01*** (4,83)
Fees and contributions	-0,073 (-2,98)***	-0,029*** (11,40)	0,00 (0,26)
Education	1,41*** (8,52)	0,89*** (11,40)	0,91*** (26,96)
Population	0,64*** (8,52)	0,44 (11,40)***	0,49*** (26,96)
Wald chi^2	1730***	1436***	1541
No. of instruments	43	43	41
No. of observations	216	1022	4366

*Note: Values in parenthesis denote z-score, significant at values *,**,***, respectively 1%, 5%, 10%*
Source: authors' calculation

The results of the empirical research based on Croatian subnational sector do not comply with empirical evidence on effects of tax structure on growth. There are several possible explanations for such dynamics. Firstly, subnational government tax structure creates different growth dynamics from the national tax structure. Secondly, most of the empirical research basis on panel dataset of countries, which does not account for country specific effects of the tax structure. It is highly unlikely that same revenue (tax) structure is appropriate for all countries. Thirdly, intergovernmental fiscal systems are different and featured by many

parameters (decentralisation level, territorial-administrative fragmentation etc.) and thus, subnational tax structure is country specific from that reason as well.

5. Concluding remarks

The empirical research on effects of tax structure on economic growth is one of the most popular fields of research in public finance economics area. Due to abundance of data, the research on tax level and tax structure effects is growing. However, lack of data presents significant obstacle in estimating the effects of subnational tax structure on economic growth. This research presents contribution to this narrower field by using the dataset on Croatian local governments. Because Croatia is one of the most centralised European countries, the empirical research focuses not only on tax structure but also adds other important budget revenue sources.

According to the estimation, we can ascribe positive results to personal income tax, which is the dominant source of revenue for Croatian local governments. Surcharge on personal income tax presents closest tax form to the real local tax in Croatian tax system and revenues are related with growth of wages and employment these results are expected. However, such positive effects might be sign of reliance on central government decision on personal income tax rate. Even small reductions in the tax rate can have detrimental effects on local government budgets and growth potentials. Surprisingly, revenues from fees and contribution earmarked for investment in communal infrastructure and revenues from taxes on goods and services have small negative effects.

The results of the research do not provide basis for clear-cut recommendations for overall subnational revenue (tax) policy. One of the recommendations would be to shift towards revenue (tax) structure of OECD countries by introducing the local property tax, which would replace existing set of property taxes, and property based non-tax fees. However, the paper opens several research avenues. So far, the empirical evidence mostly bases on the dataset of developed OECD economies with relatively high degree of decentralisation and stabile system of intergovernmental fiscal relations. In such background, even the tax structure is relatively uniform. However, there is lack of research on country specific revenue (tax) structure efficiency effects particularly in developing countries with lower level of decentralisation. This research presents one of such cases with empirical evidence that diverges from common results in the field.

6. References

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