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Transfer revenues, expenditures and tax effort of Slovenian municipalities

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This study has examined the expenditure and tax effort effect of municipal transfer revenues in Slovenia. Namely, transfer revenues received by local governments should stimulate provision of local goods and services, and consequently increase local spending. It is also predicted that this increase should be larger than one related to the equivalent increase in local income. Moreover, transfer revenues of local governments should also affect local tax (revenue collection) effort, either by increasing it (stimulation effect) or decreasing it (substitution effect). The empirical evidence based on the data for Slovenian municipalities has showed that transfer revenues have absolutely and relatively larger effect on municipal expenditures than the equivalent increase in income. However, transfer revenues have negative effect on local (municipal) tax effort, which means that substitution effect exists as transfers obviously substitute other local revenues.

Key words: Local government finances, transfer revenues, expenditure effect, tax effort effect, municipalities, Slovenia.

INTRODUCTION

Currently, there are 211 municipalities in Slovenia, a country with approximately 2 million residents. The number of municipalities has steadily increased from initial 58 in 1995. It is worth noting that large differences in the size of municipalities exist, as the largest municipality has almost 280,000 residents, whereas the smallest one has only slightly more than 300 residents. Legal provisions actually state that municipality should have at least 5,000 inhabitants, yet the data on municipal residents indicate that more than 50% of existing Slovenian municipalities do not meet that criterion (Statistical Office of Slovenia, 2011). The reason for this is related to the fact that many of them tended to be established for political reasons or exceptionality clause on historical, economical and other reasons (legally) justifying the smaller size of particular municipality was often used (Oplotnik and Brezovnik, 2004). Besides, there is no intermediate level of local authorities (regions or counties). This means that Slovenia is relatively a centralised country, given also the fact that approximately nine tenths of total government spending is allocated by central government (Government Office for Local-Self Government and Regional Policy, 2006).

According to the Local Self-Government Act (2007), municipalities in Slovenia perform local matters of public interest in order to meet the needs of their residents. Municipalities manage the municipal assets and organise municipal administration, develop conditions for economic development of the municipality, provide spatial development plans and create conditions for housing, manage and regulate local public utilities, provide social services (in particular pre-school and primary school education, social, cultural and recreational activities etc.), organise local road maintenance, fire safety etc. The data on consolidated functional expenditures of Slovenian municipalities indicate that spending on public administration, public utilities and education represented almost two thirds of all expenditures in 2009 (Ministry of Finance, 2011).

The Act on Local Finances (1998) introduced a system of appropriate expenditure in order to allow municipalities to carry out their constitutional and legal responsibilities. According to this system, last amended in 2007 fiscal year (Act on Local Finances ZFO-1, 2006), appropriate
expenditure is calculated on the basis of a special equation, which includes correctional factors for diversity in municipalities for the purpose of achieving the equalisations (in comparison to national average). Those correctional factors include spatial size of municipality, number of residents, number of residents aged below 15 and above 65 years and length of local roads. This actually means that spending on municipal constitutional and legal responsibilities does not depend (solely) on municipal revenues, but rather on “certain objective” factors that influence costs of municipalities.

In contrast, municipalities in Slovenia receive their resources from tax revenues, non-tax revenues, capital revenues, donations, transfers and EU funds. Specifically, Act on Local Finances ZFO-1A (2008) envisages and specifies that municipalities finance their activities from own tax revenues, which include revenues from inheritance and gift taxes, property taxes, taxes on profits from lotteries and gaming, taxes on real estate business transactions, 54% of personal income tax paid by municipal residents (according to the Ministry of Finance (2010) data, this source tends to be the most important one in practice), etc.; other own revenues, which include administrative fees and duties, concession duties and municipal communal rates, revenues from public utilities, environmental duties, revenues derived from the municipal property management, donations, transfers from central government budget and other public institutions etc.; municipal duties, which include compensation fees for use of municipal land etc.; and borrowing, although the amount of borrowing is legally limited. In fact, tax revenues represented slightly more than three fifths of all consolidated revenues of Slovenian municipalities, whereas transfers represented approximately one fifth and non-tax revenues approximately one ninth of all revenues in 2009. Other sources (capital revenues, donations and EU funds, if borrowing and financial investments are excluded) represented approximately five percent of all revenues (Ministry of Finance, 2011). As transfers represent the second most important source of municipal revenues, the aim of the study is to provide the evidence on the expenditure and tax effort effects of municipal transfer revenues. Since the country under consideration is Slovenia, the investigation is also associated with the specific context of post-socialist country.

LITERATURE REVIEW

Numerous reasons exist for central government paying transfers or grants to lower tiers of government, such as allocative efficiency reasons related mainly to possible greater provision of local goods and services with significant spill-over effects; equity reasons associated with possibility to limit (regressive) local taxes needed for financing local government or to compensate relatively high expenditure needs etc. (Bailey, 1999). This means that intergovernmental transfers also have expenditure effects as they stimulate provision of local goods and services. One of the first systematic discussions on the expenditure effects of intergovernmental transfers has been developed by Gramlich and Galper (1973). Based on the existing theory of intergovernmental transfers, they have classified the intergovernmental transfers into three types: (1) open-end matching grants, where the higher level of government pays some portion of the cost of certain expenditures of lower level of government, which effectively reduces the price of services delivered by local government (for example, transfers in the area of welfare state); (2) closed-end lump-sum transfers, where the higher level of government basically transfers a fixed amount of money to a lower level of government without imposing any restrictions on the use of money or changing any relative prices (for example, revenue-sharing programmes); and (3) closed-end categorical grants, where the higher level of government transfers a limited amount of money to be used for a specific programme implemented by lower level of government, which actually means that this type of grant is a hybrid of first two types (price of the programme is lowered, yet the size of the grant is limited).

Authors have pointed out that theory predicts that the expenditure effect should be larger for open-end matching grants and smaller for closed-end lump-sum transfers, whereas the expenditure effect of closed-end categorical grants should be somewhere in between of those two effects. This actually means that lump-sum grants should have only an income effect, whereas matching grants should also have substitution (price) effect (Bailey and Connolly, 1998). Nonetheless, more recent literature tends to stress that lump-sum grants should also have price effect as the grants received enable the local authority to reduce tax rates and still provide the same level of local public goods or services. As this happens, marginal costs of public funds are lower, which means that the effective price of providing the public goods or services is also reduced. It has also been argued that price effect of lump-sum grants is larger and the higher the ration of the grants to the tax collections the more distortionary those collections are (Dahlby, 2009).

Gramlich and Galper (1973) have also developed an empirical model of state and local fiscal behaviour in order to examine the effect of various forms of transfers on local expenditures. Interestingly, their time-series estimates for the entire United States state and local government for 1954 to 1972 periods have revealed no substitution (price) effect for open-end matching grants. This indicates that the expenditure effect of matching grants should not be larger than the one of lump-sum transfers and it tends to be even smaller than the one of categorical grants. Specifically, they have estimated that each dollar of lump-sum transfers would raise expenditures
by 43 cents, whereas each dollar of categorical grants increases spending by 80 cents. In contrast, pooled cross-section estimates for ten urban governments in the United States (1962 to 1970 periods) have revealed substitution (price) effect for matching grants, as each dollar of matching grants would increase spending by 80 cents, each dollar of lump-sum transfers by 25 cents and each dollar of categorical grants by 54 to 58 cents. These findings are in line with theoretical predictions on the expected effects of various types of intergovernmental transfers.

Besides, Gramlich and Galper (1973) have also pointed out that lump-sum transfers have larger effect on government spending than equivalent increase in private income; since they have estimated that each dollar of private income increases state and local expenditures in the United States by only 10 cents. It is worth noting that several other empirical findings have shown lump-sum transfers of central government having greater stimulatory effect on local government spending than the equivalent increase in the income of the median voter; that is, fly-paper effect (Brennan and Pincus, 1996; Strumpf, 1998). Namely, local governments have the incentive to overextend the supply of goods and services, since they do not have to bear full costs of goods and services as they are subsidised by intergovernmental grants (Eichenberger, 1994). This means that fly-paper effect actually contradicts traditional theory of grants-in-aid of exhaustive governmental expenditures (Bradford and Oates, 1971; Bailey, 1999), which is based on median voter theorem of public choice. The theorem states that intergovernmental transfers and voter income should have identical effects on local government expenditure (Wyckoff, 1991).

In fact, the fly-paper effect was one of the main concerns in the earlier literature on intergovernmental transfers (Gamkhar and Shah, 2007). Consequently, several possible general explanations for the observed fly-paper effect phenomenon have been provided in the literature (Hines and Thaler, 1995; Bailey and Connolly, 1998; Gamkhar and Shah, 2007; Inman, 2008; Dahlby, 2009). For instance, Bailey and Connolly (1998) have provided an overview of ten theoretical explanations of the effect. Those explanations include deadweight loss argument (as local governments use distortionary taxes to finance some of their expenditures (Hamilton, 1986; Dahlby, 2009), whereas intergovernmental grants received by local governments should not be distortionary), transaction cost argument (as high transaction costs induce local governments to prefer grant spending instead of tax cuts), fiscal illusion hypothesis (as grants received do not affect perceived local budget constraints), argument on pressure groups activities (as they should be a key actors in budget determination and their power varies between different grants allocated, leading to variations in the magnitude of the fly-paper effect) etc.

Similarly, Gamkhar and Shah (2007) have also provided extensive overview of theories on fly-paper effect. Their overview emphasises two distinct approaches, that is, first-generation and second-generation theories. Particularly relevant is their discussion on second-generation theories, which focus more on efficiency implications of transfers in decentralised systems. These theories state that the effect of intergovernmental transfers depends on the structure and on the institutional arrangements of the local fiscal system, as the transfers may create problems associated with soft budget constraints and lower tax effort of local governments, not to mention the possibility of moral hazard problem. Nonetheless, Inman (2008) has narrowed the explanation of the effect to four possible explanations. His first possible explanation focuses on the data and states that intergovernmental transfers are miss-measured, since matching grants tend to be equalised with lump-sum aid. Namely, fly-paper effect may be observed because matching grants tend to have larger expenditure effect than lump-sum transfers, although several authors have argued that fly-paper effect still remains, even if matching grants and aid programmes are correctly classified (Wyckoff, 1991). Second possible explanation sees the phenomenon basically as the consequence of misspecifications of the technology and costs of providing services at the local level, which should occur due to the failure to correctly validate the possibility of citizen exit from high tax jurisdictions. Third possible explanation focuses on the possibility of misspecification of citizen fiscal choices, as citizens may not understand the complexity of grant programmes. Finally, the last possible explanation, which should be the most plausible one according to Inman, sees the phenomenon as a consequence of politics. Namely, voters perceive grant's budgetary effects, yet they allocate public and private resources through separate »mental accounts«; public budget is taken as the responsibility of government and private budget as individual responsibility (Hines and Thaler, 1995).

The issue of fly-paper effect has subsequently been extensively addressed also in the empirical literature (Case et al., 1993; Becker, 1996; Turnbull, 1998; Worthington and Dollery, 1999; Knight, 2002; Sagbas and Saruc, 2004; Sour and Giron, 2009; Acosta, 2010; just to name few authors and papers out of vast array of research in this field), although Acosta (2010) has stressed that the overwhelming majority of studies focuses on industrialised countries. If the discussion is narrowed to approaches focused on non-industrialised countries, Sagbas and Saruc (2004) have tested the existence of the fly-paper effect for grants received by Turkish municipalities and provinces using cross-sectional data for municipalities and panel data for provinces. They have employed conventional approach, where fly-paper effect is investigated by comparing the effect of income and transfers on local expenditures.

Their estimations suggest that fly-paper effect could exist in large and small non-metropolitan municipalities, metropolitan district municipalities and in Turkish
provinces, but they could not validate the effect for metropolitan municipalities. Sour and Giron (2009) have estimated the fly-paper effect for all Mexican municipal governments for 1990 to 2007 period. Their panel data based log-linear regression estimates suggest that fly-paper exists in total municipal government expenditures as well as in non-capital expenditures and public works and social expenditures of municipalities, where the effect should be particularly strong (the grant elasticity is above 0.9, whereas the income elasticity is only approximately 0.1). Similar findings have also been presented by Acosta (2010), who has provided estimates of the fly-paper effect for 124 municipalities from Buenos Aires province using cross-sectional data for 1997. His estimates though suggest that fly-paper effect should be relatively small in magnitude, since the grant elasticity varies from 0.63 to 0.68, whereas the income elasticity varies from 0.51 to 0.54, depending on the estimation technique being applied (ordinary least squares method, maximum likelihood method, IV method etc.).

Nevertheless, although numerous studies have empirically tested the expenditure effects of intergovernmental transfers and possible existence of fly-paper effect in local government financing, it needs to be acknowledged that some studies were not able to confirm the validity of the effect. For instance, Worthington and Dobbie (1999) have investigated the fly-paper effect in the sample of 176 Australian local government areas for 1992 to 1993 periods and could not validate the effect; their estimates even suggest that intergovernmental transfers have statistically significant negative effect on local government expenditures. Inconclusive results have also been delivered by Knight (2002) for the U.S. Federal Highway Aid Programme for 1983 to 1997 periods, as different estimation techniques provided different results. Becker (1996) has even argued that fly-paper effect is actually a statistical artefact, since inappropriate functional form of estimation may generate the illusion of fly-paper effect presence. Accordingly, Bailey (1999) has presented an overview of potential factors causing overestimation in the size of the fly-paper effect. Those factors include possible misspecification of the type of intergovernmental grant, use of an inappropriate function form in regression analysis, and use of inappropriate explanatory (control) variables in the regression analysis. Gamkhar and Shah (2007) have added some other econometric issues causing the problems associated with the possible overestimation of the fly-paper effect, which include possible endogeneity of grant variables, ratchet effect in the expenditure changes or discrepancy between the short-run and the long-run effect of transfers on local spending (for example, displacement effects etc.).

Nonetheless, more recent literature has also related expenditure effects of intergovernmental transfers to the local government tax effort, investigating whether those transfers generate stimulation or substitution effect on local tax effort (Baretti et al., 2002; Saruc and Sagbas, 2008; Cardenas and Sharma, 2011), which is related to the efficiency implications of intergovernmental transfers. Namely, if intergovernmental transfers stimulate tax effort, then they also cause efficiency gains, as this would make local governments fiscally less dependent from central government. Saruc and Sagbas (2008) have argued that the effect of transfers on local government tax effort could be observed through local government spending levels. If a unit of transfers received causes more than a unit increase in spending, the stimulation effect on tax effort is observed as local governments obviously spend additional money obtained from taxes collected. In contrast, if local government spending increases less than a unit, then substitution effect is observed as local authorities obviously reduce tax collections due to transfers received. For instance, Baretti et al. (2002) have estimated the effects of equalising transfers (lump-sum grants) from federal to state governments for ten (Western) German states using panel data for 1970 to 1998 time period. They have found statistically significant negative effect of lump-sum grants on tax revenues of German states. Similarly, Cardenas and Sharma (2011) have investigated the fly-paper effect and its relation to local government revenue effort for 1195 Mexican municipalities using panel data for 1993 to 2005 periods. They have confirmed the presence of fly-paper effect, although they have pointed out that the magnitude of the effect is inversely related to the municipality’s economic well-being (for example, the magnitude of the effect should be approximately 0.6 in very poor municipalities and approximately 0.3 in very rich municipalities). Their estimation has also shown that richer municipalities in the sample experience substitution effect of transfers revenues (lower levels of revenue collection effort), whereas poorer municipalities experience a neutral revenue collection effort. Saruc and Sagbas (2008) have also investigated the relationship between the fly-paper effect and local tax effort for 66 Turkish provinces using cross-sectional data for 1997. Their estimation suggests that fly-paper should be larger in richer provinces than in poorer provinces. They have also pointed out the presence of substitution effect of transfers on local tax effort for poorer provinces and stimulation effect for richer provinces, which is contrary to the findings elaborated for Mexican municipalities.

METHODOLOGY

The purpose of this paper is to provide the evidence on the direction and magnitude of the effect of transfer revenues on expenditures and tax effort for a cross-section of 210 Slovenian municipalities using data for 2009 fiscal year. Empirical analysis utilises cross-sectional data since problems exist with obtaining consistent time series data on revenues and expenditures for Slovenian municipalities, given the fact that their number has risen constantly and substantially in the last 17 years, predominantly with the devolutions of existing municipalities, and substantial changes in the legislation on municipal finances happened in the last few years (last modification appeared in 2008 and became valid for
2009 fiscal year). This actually means that data comparison between different fiscal years could be problematic. Based on the conventional empirical literature concerned with the estimation of expenditure and tax effort effects of intergovernmental transfers (Saruc and Sagbas, 2008; Acosta, 2010; Cardenas and Sharma, 2011), the estimated reduced-form regression model for local government expenditure is described as follows:

\[ \text{EXP}_i = \beta X_i + u_i, \]

Where EXP\(_i\) is total expenditure per capita for municipality \(i\), \(X_i\) represents explanatory variables that affect municipal expenditure level, and \(u_i\) describes unobservable shocks to municipal spending. Regression analysis uses per capita municipal total expenditures as dependent variable, which means that both current and investment expenditures and transfers, as well as loans given and debt repayments are included.

Specifically, explanatory variables used in the analysis are:

- 1) TRF - per capita municipal transfer revenues, in order to validate the aforementioned existence of expenditure and stimulation/substitution effect of intergovernmental transfers. Intergovernmental transfers of municipalities considered in the analysis are those received from central government budget as well as from other public funds and agencies, including possible financial equalisation;
- 2) INC - per capita income, which relates to idea that available income should be the other important prerequisite for municipal spending, consequently also making the possibility to compare the magnitude of income and transfers expenditure effects. Average yearly gross salary per employed person in i-th municipality is used as proxy for describing per capita income, since those data are available at municipal level.
- 3) POP - total municipal population in 1,000 in order to control for potential scale effects.
- 4) DNS - municipal population per squared kilometre of territory, which describes the density of population in i-th municipality in order to control for potential congestion effects.
- 5) PGR – percentage change of the municipal population in last year in order to control for potential demand variations due to demographic changes and migrations.
- 6) UEM - proportion of population unemployed (registered unemployment rate based on the National Labour Office methodology).
- 7) OLD – proportion of population in municipality older than 65 years.
- 8) YOU - proportion of population in municipality younger than 15 years.

Besides, the analysis also includes additional control variables such as:

- 1) NDS - expenditures needs to control for the ability of municipality to meet the demands for local public goods provision. Basically, the expenditures on administrative operation, public utilities and education are used as a proxy for describing the core functions of the municipalities, and they are all expressed in per capita terms (those three types of expenditures are namely the most important expenditures of municipalities in Slovenia, since the provision of those services and functions is particularly in the municipal domain).
- 3) POP - total municipal population in 1,000 in order to control for potential scale effects.
- 4) DNS - municipal population per squared kilometre of territory, which describes the density of population in i-th municipality in order to control for potential congestion effects.
- 5) PGR – percentage change of the municipal population in last year in order to control for potential demand variations due to demographic changes and migrations.
- 6) UEM - proportion of population unemployed (registered unemployment rate based on the National Labour Office methodology).
- 7) OLD – proportion of population in municipality older than 65 years.
- 8) YOU - proportion of population in municipality younger than 15 years.

Source of data for variables EXP, TRF and NDS is Ministry of Finance (2011), whereas Statistical Office of the Republic of Slovenia (2011) is data source for the variables INC, POP, DNS, PGR, UEM, OLD and YOU. All data relate to 2009. The last three variables are included in the analysis to control for group-specific demands; predominantly of those population groups that have relatively larger demand for public spending. These control variables are integrated into the model, since the majority of them are usually standard in the empirical literature dealing with the analysis of expenditure and tax effort effects of intergovernmental transfers (Worthington and Dollery, 1999; Amusa et al., 2008; Saruc and Sagbas, 2008; Acosta, 2010). For instance, the exposition given in Worthington and Dollery (1999) or in Amusa et al. (2008) specifies expenditure function for governmentally provided goods as the function of the total amount of resources that are available for funding such expenditures, the function of the relative tax price of expenditures, and the function of institutional and other factors that affect expenditure outcomes. Saruc and Sagbas (2008) have utilised variables such as local gross domestic product (GDP), revenue sharing, total population, population increase, share of industry in local GDP, urbanisation and immigration rate in their estimations of local government functions. Similarly, Acosta (2010) has employed income, transfers, population, proportion of elderly and proportion of school attendance as explanatory variables in his analysis.

Descriptive statistics of the variables included in the empirical analysis is presented in Table 1. Statistics indicates that average per capita expenditures of Slovenian municipalities amount to 1141 EUR per year, while average intergovernmental transfers received by Slovenian municipality amount to 297 EUR, which means that transfers represent an important part of municipal revenues. Nevertheless, descriptive statistics also indicates that municipalities in Slovenia differ substantially in terms of municipal spending activities, size and population structure, and also in economic activity. Namely, it can be observed that average yearly gross salary, which serves as a proxy for income, varies from approximately 8,800 EUR to 22,200 EUR, whereas average unemployment rate varies from 3.7 to 24%. Nonetheless, substantial variations exist also in population density and growth, and in shares of young and old population.

RESULTS AND DISCUSSION

Table 2 represents ordinary least squares estimations for a municipal expenditures function, where EXP serves as dependent variable and both White heteroscedasticity-consistent standard errors as well as p-values are shown in parentheses. There seems to be no problems associated with the potential presence of multicollinearity, since there is no correlation coefficient that goes above 0.9 in absolute terms. In fact, the strongest relationship is between variables EXP and NDS (slightly more than 0.8), between variables EXP and TRF (slightly less than 0.8) and between variables TRF and DNS (approximately 0.7). The majority of other correlation coefficients have rather low values in absolute terms. All estimated models seem to be valid, since F-statistics is highly statistically significant, and structurally stable, as p-values of Reset test are not statistically significant. Besides, residuals seem to be rather normally distributed (values of mean are \(-3e^{-15}\), \(-2e^{-13}\) and \(5e^{-16}\) respectively).

Estimates suggest that more than four fifths of variation in per capita total expenditures of Slovenian municipalities could be explained with 7 explanatory variables, which is relatively good result, since cross-sectional data are used. Nonetheless, explanatory variables PGR and OLD are left out of the model, since the \(\chi^2\) test
Table 1. Descriptive statistics of variables included in the analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP (EUR)</td>
<td>1,141</td>
<td>453</td>
<td>161</td>
<td>3,911</td>
<td>1,008</td>
</tr>
<tr>
<td>TRF (EUR)</td>
<td>297</td>
<td>276</td>
<td>1</td>
<td>2,023</td>
<td>228</td>
</tr>
<tr>
<td>INC (EUR)</td>
<td>15,114</td>
<td>1,749</td>
<td>8,820</td>
<td>22,287</td>
<td>14,983</td>
</tr>
<tr>
<td>NDS (EUR)</td>
<td>737</td>
<td>345</td>
<td>122</td>
<td>3,023</td>
<td>659</td>
</tr>
<tr>
<td>POP (in 1,000)</td>
<td>9.725</td>
<td>21.761</td>
<td>0.320</td>
<td>278.314</td>
<td>4,701</td>
</tr>
<tr>
<td>DNS</td>
<td>113</td>
<td>124</td>
<td>5</td>
<td>1019</td>
<td>79</td>
</tr>
<tr>
<td>PGR (per 1,000 residents)</td>
<td>4.1</td>
<td>13.9</td>
<td>-29.9</td>
<td>77.8</td>
<td>2.8</td>
</tr>
<tr>
<td>UEM (%)</td>
<td>9.8</td>
<td>3.9</td>
<td>3.7</td>
<td>24.0</td>
<td>9.7</td>
</tr>
<tr>
<td>OLD (%)</td>
<td>16.47</td>
<td>2.29</td>
<td>12.06</td>
<td>26.89</td>
<td>16.40</td>
</tr>
<tr>
<td>YOU (%)</td>
<td>14.41</td>
<td>1.79</td>
<td>8.21</td>
<td>20.78</td>
<td>14.25</td>
</tr>
</tbody>
</table>

Table 2. Estimates of municipal expenditure functions.

<table>
<thead>
<tr>
<th>Estimation</th>
<th>Linear model (1)</th>
<th>Linear DV model (2)</th>
<th>Log-linear model (3)</th>
<th>N</th>
<th>$R^2_{adj.}$</th>
<th>SEE</th>
<th>Durbin-Watson</th>
<th>F-stat.</th>
<th>Ramsey (Reset) F</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERCEPT</td>
<td>515.693 (181.8525, 0.005)</td>
<td>362.803 (189.898, 0.057)</td>
<td>1.7867 (0.8583, 0.039)</td>
<td>210</td>
<td>0.867</td>
<td>0.871</td>
<td>1.814</td>
<td>196.232 (0.000)</td>
<td>1.151 (0.285)</td>
</tr>
<tr>
<td>TRF</td>
<td>0.588 (0.143, 0.000)</td>
<td>0.533 (0.150, 0.000)</td>
<td>+0.227 (0.117, 0.054) RM</td>
<td>210</td>
<td>0.5525 (0.0456, 0.000)</td>
<td>0.0016 (0.0006, 0.012)</td>
<td>0.0007 (0.0002, 0.000)</td>
<td>-0.0079 (0.0025, 0.002)</td>
<td></td>
</tr>
<tr>
<td>INC</td>
<td>0.012 (0.007, 0.086)</td>
<td>0.025 (0.009, 0.008)</td>
<td>-0.007 (0.003, 0.010) RM</td>
<td>210</td>
<td>0.849 (0.140, 0.000)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td></td>
</tr>
<tr>
<td>NDS</td>
<td>0.848 (0.146, 0.000)</td>
<td>0.849 (0.140, 0.000)</td>
<td>0.5525 (0.0456, 0.000)</td>
<td>210</td>
<td>0.0016 (0.0006, 0.012)</td>
<td>0.0007 (0.0002, 0.000)</td>
<td>0.0007 (0.0002, 0.000)</td>
<td>-0.0079 (0.0025, 0.002)</td>
<td></td>
</tr>
<tr>
<td>POP</td>
<td>-1.707 (0.778, 0.029)</td>
<td>-1.704 (0.830, 0.041)</td>
<td>-0.0016 (0.0006, 0.012)</td>
<td>210</td>
<td>0.849 (0.140, 0.000)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td></td>
</tr>
<tr>
<td>DNS</td>
<td>0.491 (0.184, 0.008)</td>
<td>0.538 (0.194, 0.006)</td>
<td>0.5525 (0.0456, 0.000)</td>
<td>210</td>
<td>0.0016 (0.0006, 0.012)</td>
<td>0.0007 (0.0002, 0.000)</td>
<td>0.0007 (0.0002, 0.000)</td>
<td>-0.0079 (0.0025, 0.002)</td>
<td></td>
</tr>
<tr>
<td>UEM (%)</td>
<td>-8.583 (3.093, 0.006)</td>
<td>-9.302 (3.046, 0.003)</td>
<td>-0.0079 (0.0025, 0.002)</td>
<td>210</td>
<td>0.849 (0.140, 0.000)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td></td>
</tr>
<tr>
<td>YOU (%)</td>
<td>-21.137 (8.517, 0.014)</td>
<td>-21.453 (8.334, 0.011)</td>
<td>-0.0118 (0.0068, 0.087)</td>
<td>210</td>
<td>0.849 (0.140, 0.000)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
<td>0.0975 (0.0795, 0.221)</td>
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</tr>
</tbody>
</table>

has shown that they tend to be redundant variables. If simple linear regression model is analysed (column 1), one unit (euro) larger transfer revenues per capita cause approximately 59 eurocents larger per capita municipal expenditures, whereas one euro larger per capita income causes only approximately one eurocent larger per capita expenditures. This indicates that expenditure effects of transfer revenues are larger than those of income, although the clear statement on the presence of the fly-paper effect should be avoided, since types of transfer revenues have not been specified and linear regression method has been used. Nevertheless, the parameter of transfer revenues does not exceed one, which indicates the existence of substitution effect of transfers. As Saruc and Sagbas (2008) have pointed out, this should indicate that transfers substitute local (tax) revenues. It should also be considered that local goods and services provision, which tends to be one of the main purposes of transfers, is also not stimulated as expected. Column 2 presents the results of linear regression model estimation, where dummy variable for richer municipalities has been introduced. Namely, dummy variable for municipalities exceeding median income has been added to estimate potential variations of income and transfer effect on municipal expenditures between “richer” and “poorer” municipalities. Subgroups include 105 richer and 105 poorer municipalities, as median income is used to differentiate among them. This concept follows theoretical consideration exposed in the literature overview presented in Saruc and Sagbas (2008), where separation of local government units is viable if substantial differences exist among them. Nonetheless, this paper still tries to estimate one function, but takes into account possibility that differences in the effect of income and transfers exist among two different subgroups of municipalities. Yet, the results indicate that the expenditure effect of transfers should be larger and the expenditure effect of income should be smaller in richer municipalities. This implies that the difference in the effect of transfers over the effect of income is larger in
richer municipalities, although substitution effect of transfers on municipal (tax) revenues is prevailing in both subgroups.

In contrast, column 3 presents the results of log-linear regression function estimation. This means that the elasticity of the effect of income and transfers on total expenditures is estimated, potentially escaping the bias of linear estimation. The results suggest that expenditure effect of transfers is still larger, although the difference is smaller compared to linear estimation. Namely, the elasticity of municipal expenditures with respect to per capita income is approximately 0.10 (although this parameter is not statistically significant), while the coefficient on per capita transfers is higher, approximately 0.16, so the discrepancy amounts to approximately 6 eurocents. Still, the magnitude of the effect seems to be very small, in particular due to the relatively small grant elasticity. Gramlich and Galper (1973) or Case et al. (1993) have stressed that grant elasticity should be above 0.4, whereas income elasticity is expected to range up to 0.1. This means that the magnitude of income elasticity obtained from the analysis compares favourably to the expectations but the magnitude of grant elasticity not.

Regarding other explanatory variables, there seems to be statistically significant evidence on rather weak scale and congestion effects, as municipal expenditures per capita tend to decrease with size of the municipality, and increase with population density. Furthermore, municipalities with a greater proportion of groups with high demand for public goods and services do not necessarily have higher expenditure levels (signs of parameters for variables UEM and YOU), which is contrary to theoretical predictions. Finally, the effect of variable NDS, representing spending on main (core) municipal functions, is positive, which is in line with theoretical predictions.

CONCLUSION AND RECOMMENDATIONS

The purpose of the study presented in the paper is related to the investigation of expenditure and tax effort effects of intergovernmental transfers in Slovenian municipal financing system. The empirical research indicates that the expenditure effect of transfers is larger than the expenditure effect of income, which is according to theoretical predictions. Moreover, if the findings from the log-linear estimation are observed, the estimated difference between those two parameters capturing the effects of income and transfers is relatively small in magnitude (the difference is less than 0.06), especially compared to some other international findings. Interestingly, the value of coefficient on per capita transfers is very low, although the intergovernmental grants have not been structured. Namely, the theory predicts that expenditure effects should be larger for matching grants than for lump-sum grants. This means that specific focus only on lump-sum grants would possibly even lower the values of coefficients, thereby even further restraining the possibility for finding evidence on larger elasticity of intergovernmental transfers compared to the elasticity of income.

Furthermore, it should be acknowledged that the impact of income is problematic if statistical significance is taken into account. This suggests rather limited dependence of municipal spending on per-capita income as one of the most important sources of tax (and some other own) revenues. The problem of insufficient relations between municipal expenditures and revenues in Slovenia has already been addressed by Oplotnik and Brezovnik (2004), although some legal amendments concerning revenue-sharing and fiscal autonomy of municipalities have been made in the last few years. The observed effect of explanatory variables serving as proxies to capture the effect of various social groups with high demand for public goods and services (such us young people or unemployed persons) is also not in line with theoretical predictions, which further accelerates the problem of local government expenditure determination. Yet, as spending on municipal constitutional and legal responsibilities does not depend (solely) on municipal revenues, but rather on “certain objective” factors that influence costs of municipalities, it should be expected that expenditure effects of intergovernmental transfers should be lower than in countries where the amount of municipal (or other lower government tiers) spending more depends on revenues obtained. Finally, the empirical research has pointed out that the impact of transfers on municipal expenditures in Slovenia obviously generates substitution effect, which means that transfer revenues substitute for municipal own revenues, thereby actually reducing tax effort.

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