Budget Outcomes and Political Accountability: The case of Eastern Croatia region

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BUDGET OUTCOMES AND POLITICAL ACCOUNTABILITY: THE CASE OF EASTERN CROATIA REGION[1]

ABSTRACT

Regional disparities have been recognised as one of the obstacles to the conduct of a sound economic policy. Scholars of political economy and public sector economics emphasise the role of public finance, i.e. budget outcomes and collective action overall, in that process. The first goal of this article is to investigate the differences between Eastern Croatia and the remaining five regions (Northern Croatia, Central Croatia, Dalmatia, North-Adriatic Croatia and the City of Zagreb) regarding their budget outcomes and political accountability. Budget outcomes will be expressed by local governments' share of surplus/deficit in total revenues. Political accountability will be proxied by their online local budget transparency index (OLBI), which has been annually measured for all Croatian counties, cities and municipalities. The second goal is empirically to determine possible clusters within local governments in Eastern Croatia. Cluster analysis is conducted on a sample of 127 Eastern Croatian local governments over 2014-2017 period. The results show that Eastern Croatia exhibits low budget outcomes and low political accountability levels, with four clusters emerging - from lowest to highest performers regarding budget outcomes and political accountability levels. The paper is expected to contribute to the literature by relating the importance of local government budget transparency – a prerequisite for citizens' participation in budgetary processes – for budget outcomes in Croatia.

Key words: *Budget outcomes, Online budget transparency, Political economy, Croatian local governments, Cluster analysis*

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1. Introduction

The interplay between incumbents and voters has many applications. One of them concerns budget outcomes (surplus or deficit of national, regional or local budgets) and the question of accountability, which is directly tied to budget transparency. The premise behind collective action (collecting taxes and public spending) is the level of trust between the principal (voters) and the agent (incumbent). In this relationship, it is up to the incumbent to signal the level of its own trustworthiness and accountability. If that is so, in the best-case scenario, we could expect incumbents to signal their level of accountability and competence by increasing the level of budget transparency. Consequently, the motivation for fiscal misbehaviour and the available instruments for such misbehaviour will be minimised (Eslava, 2011). There are several ways of reaching this level. Incumbents can decide that this is the best (dominant) strategy for them since it allows them to distinguish themselves from their competitors or pressure from the media and electorate can lead to such an optimal outcome (Alt and Lowry, 1994.; Ferejohn, 1999).

The reality is, however, very different. We are plagued by budget misbehaviour that works to the advantage of the incumbents. The literature has identified several causes that have at their roots the lack of political accountability and budget transparency (Alesina and Perotti, 1996; Hagen and Vabo 2005; Stein, et al 1998). The political economy literature highlights the role of fiscal illusion (Alesina and Perotti, 1996) and information asymmetry (Alt et al., 2006) in that process but most current empirical research has focused on cross-country comparisons.

This research has two goals. First, to determine whether Eastern Croatia differs from the remaining five regions (Northern Croatia, Central Croatia, Dalmatia, North-Adriatic Croatia and the City of Zagreb) with respect to their budget outcomes and political accountability. Second, by using cluster analysis for confirmatory purposes, to check whether there are groups of local governments that could be labelled as having low or high budget outcomes with low or high political accountability, respectively. Cluster analysis is carried out on Eastern Croatia, using average values for the period 2014-2017. To the best of our knowledge, a similar contribution regarding the role of political accountability and budget outcome at the local level is new in the literature. It follows from the development of an Open Local Budget Index (Ott et al, 2018), which we use as a proxy for political accountability on the local level. In addition, the paper uses two measures of budget outcome (the share of the surplus/deficit in total operating revenues and the share of the surplus/deficit in total revenues).

The rest of the paper is organized as follows. The second section gives a short literature review. The third explains data and methodology. The fourth presents the results of the cluster analysis. The main conclusions, limitations and suggestions for further research are summarized in section five.

2. Literature review

At this stage, only a few research papers have been published on the determinants of budget outcomes in Croatia. They vary with respect to local governments – cities vs municipalities (Erjavec et al, 2017; Rašić Bakarić at al, 2014a; 2014b), political budget cycles (Mačkić, 2013; 2014) and their focus on borrowing (Bajo and Primorac, 2010). Nevertheless, they all have one thing in common: none of them refers to the part played by the level of transparency and in that sense to political accountability in the determination of budget outcomes.

On the international front, Von Hagen and Harden (1995), Stein et al (1998), Alesina et al. (1999), Alt and Lassen (2006) and Benito and Bastida (2009) find a positive relationship between higher budget transparency and better budget performance on the national and the international level. Researchers that have focused on the sub-national level report the following conclusions. Turley et al (2015), del Sol (2013) and Akhmedov and Zhuravskaya (2004) confirm a positive correlation between urban areas, higher fiscal transparency and better budget outcomes. A positive effect of population on better budget outcomes was reported by Gandia et al. (2007), Serrano-Cinca et al. (2008) and del Sol (2013). Laswald et al. (2005) and Serrano-Cinca et al. (2008) found that the wealth effect is also positively correlated with better budget outcomes while a negative correlation between unemployment and fiscal transparency was reported by Caamano-Alegre et al. (2013). Other factors that are positively correlated with fiscal transparency are better credit ratings and lower levels of corruption (Ma and Wu, 2011), higher levels of political competition (Alt et al., 2006; and Caamano-Alegre et al., 2013) and experiences with democracy (Gonzalez, 2000); Akhmedov and Zhuravskaya, 2004). As far as the authors are familiar, there is only one paper reporting a negative correlation between transparency and budget outcomes (Gerunov, 2016).

This brief literature review points to two preliminary conclusions. First, the existing research on local governments in Croatia has neglected the transparency channel when looking at the political accountability, since there was previously no possibility to measure it. Second, none of the existing papers used both measures of budget outcome. Considering these two points, the paper presents data and methodology used in the empirical part of the research.

3. Data and Methodology

A comparative analysis of Croatian regions vis-à-vis budget outcomes and political accountability is the first research goal of the paper. In order to do that this paper uses the Tax Administration (2019) classification of Croatia into six regions:

1. City of Zagreb;
2. Central Croatia (Zagreb, Krapina-Zagorje, Sisak-Moslavina and Karlovac county);
3. Northern Croatia (Varaždin, Koprivnica-Križevci, Bjelovar-Bilogora, and Međimurje county);
4. Eastern Croatia (Virovitica-Podravina, Požega-Slavonia, Brod-Posavina, Osijek-Baranja and Vukovar-Srijem county);
5. North-Adriatic Croatia (Primorje-Gorski Kotar, Lika-Senj and Istria county);
6. Dalmatia (Zadar, Šibenik-Knin, Split-Dalmatia and Dubrovnik-Neretva county).

The next step is the definitions. Budget outcome is defined as the budget deficit/surplus that local government records at the end of the fiscal/calendar year. In this paper, two measures of budget outcome will be used. The first measure is the share of surplus/deficit in total operating revenues, $stor$, and is represented by the following equation:

$$stor_{it} = \frac{tor_{it} - toe_{it}}{tor_{it}} \cdot 100, i = 1, \dots, N, t = 1, \dots, T,$$

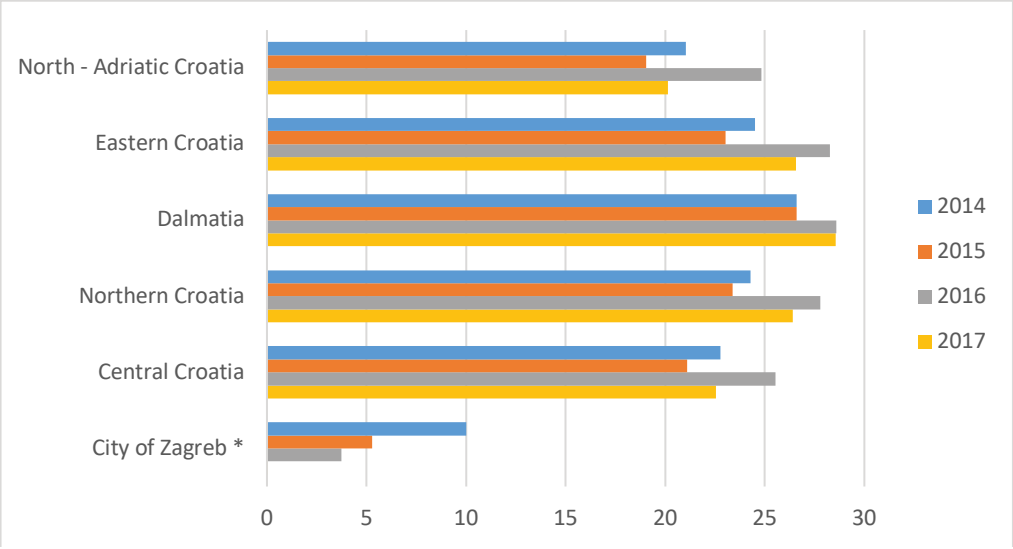
where tor represents total operating revenues; toe represents total operating expenditures; i represents city/municipality (556 in total) and t is year of observation for the 2014 – 2017 period.
The second measure is the share of surplus/deficit in total revenues, str, is represented by the following equation:

$$str_{it} = \frac{tr_{it} - te_{it}}{tr_{it}} \cdot 100, i = 1, \dots, N, t = 1, \dots, T,$$

where tr represents total revenues; te represents total expenditures; i represents city/municipality (556 in total) and t is year of observation for the 2014 – 2017 period. Then, for each of the six regions, average values of shares of surplus/deficit in total revenues for the four – year period were calculated.

The Open Local Budget Index (OLBI) calculated by Ott et al. (2018) is used as a proxy for political accountability on the local level since it measures incumbents' implicit responsibility to govern public assets according to the principles of good governance. If the incumbent manages public funds in such a way, then he/she will want to show all the records and budget documents. Thus, transparency acts as a key determinant of the budget deficit (Alt and Lassen, 2006). The OLBI is calculated as a sum of five key budget documents (budget proposal, enacted budget, citizens' budget, mid-year report, and year-end report) that a local government produces and publishes annually on its official website. The score for each local government ranges from 0-5, depending on the number of budget documents published.

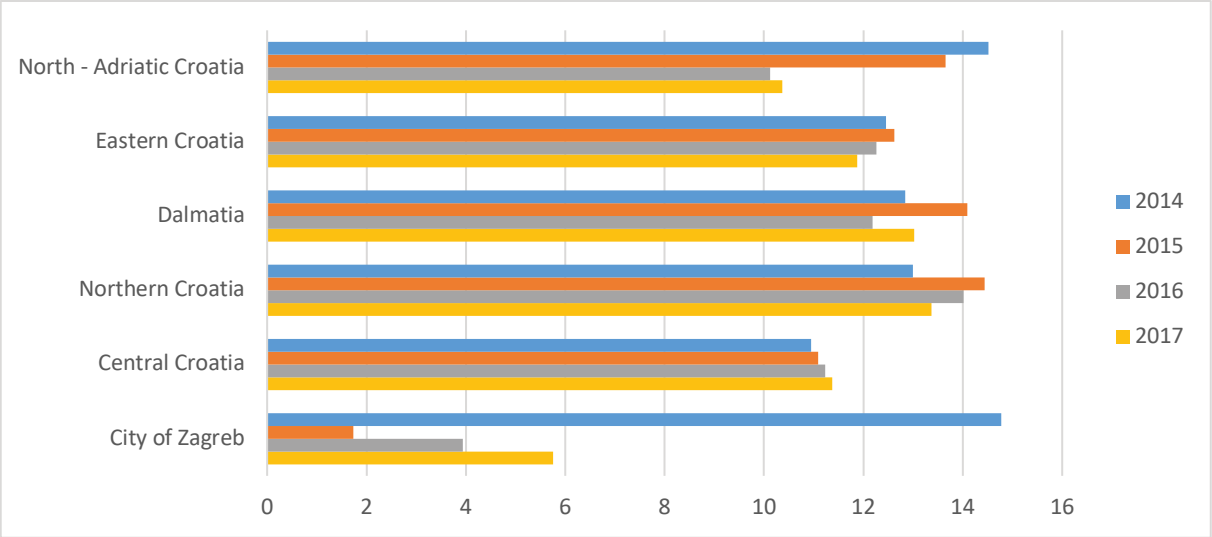
Graph 1: *The share of surplus/deficit in total operating revenues for six Croatian regions (in %, average values)*



*City of Zagreb had very small value for year 2017
Source: Authors' calculations based on Ministry of Finance (2019)

Data on the share of surplus/deficit in total operating revenues for six Croatian regions in the period 2014-2017 (Graph 1) point to two main conclusions. First, the City of Zagreb is a clear outlier since its share of surplus or deficit in total operating revenues is much better than that of the remaining five regions. Second, Eastern Croatia and Dalmatia are two regions that have the worst performance in the observed period. When one looks at the data in Graph 2, the first conclusion regarding the City of Zagreb does not change, but the second one does. Eastern Croatia is not among the worst performers, but it is the total cost of public goods and services compared to the public funds that the paper is looking at so it is the data shown in Graph 1 that are crucial.

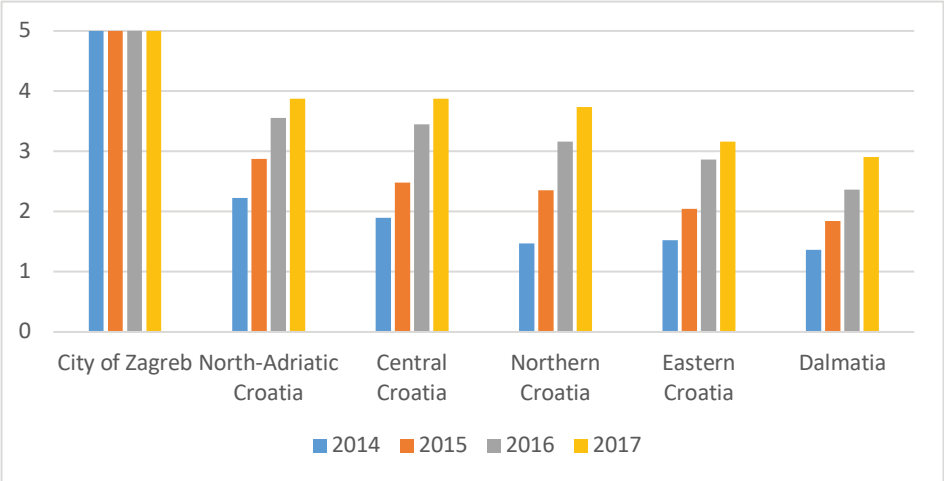
Graph 2: *The share of surplus/deficit in total revenues for six Croatian regions (in %, average values)*



Source: Authors' calculations based on Ministry of Finance (2019)

An identical interpretation for Graph 1 could be used in the case of the data shown in Graph 3 with the City of Zagreb being a positive outlier and the two worst counties being Dalmatia and Eastern Croatia. Although we can see a positive trend in the observed period, both of these regions report a chronically low level of political accountability.

Graph 3: OLBI score for six Croatian regions (average values)



Source: Authors' calculations based on Ott et al. (2018)

The comparative analysis of six Croatian regions points to the following conclusion. There is a negative correlation between budget outcomes and political accountability in the case of two Croatian regions: Dalmatia and Eastern Croatia. Since Dalmatia enjoys rents from tourism, the level of disposable income of people living in this region could be independent of the budget outcomes and political accountability of local level incumbents. Thus, in the remaining part of the paper the cluster analysis will be conducted on local governments in Eastern Croatia. In order to do that the paper introduces three additional variables: average annual resident income per capita (pc), unemployment rate and fiscal capacity pc (see Table 1).

Table 1: *Definition of variables*

Variable	Description	Source
OLBI	Budget transparency measure as a proxy for local political accountability; count data index ranging from 0 to 5, measured annually as the online availability of five key local budget documents (budget proposal, enacted budget, year-end report, mid-year report and citizens' guide).	Ott et al. (2018)
income_pc	Average annual resident income pc.	Obtained on request from the Ministry of Regional Development and EU Funds. Pc values are based on population estimates from Croatian Bureau of Statistics (2019).
fiscal_cap_pc	Fiscal capacity pc, i.e. local governments' own revenues pc, calculated as operating revenues minus all grants.	Ministry of Finance (2019). Pc values are based on population estimates from Croatian Bureau of Statistics (2019).
unempl_rate	Unemployment rate – Croatian Employment Service data on registered unemployed persons by local governments.	Obtained on request from the Ministry of Regional Development and EU Funds
bal_total_rev	The share of surplus or deficit total revenues in total revenues.	Ministry of Finance (2019)
bal_oper_rev	The share of surplus or deficit total operating revenues in total operating revenues.	Ministry of Finance (2019)

Note: All variables refer to average values for the 2014-2017 period.

Cluster analysis is a useful data reduction technique used to group objects based on the characteristics they possess. The resulting clusters of objects should then exhibit high internal (within-cluster) homogeneity and high external (between-cluster) heterogeneity (Hair et al, 1995). With metric data and a focus on proximity (distance measures of similarity, e.g. Euclidean) the primary goal of cluster analysis is to obtain two or more groups based on their similarity. The clustering algorithm used in this paper is a hierarchical clustering procedure or Ward's method.[2]

Prior to clustering, it is necessary first to obtain standardized values of the variables included. This is done using the z-score standardization of the variable value that applies the following calculation:

$$z = \frac{x-\mu}{\sigma}$$

[2] In this procedure the similarity used to join clusters is calculated as the sum of squares between the two clusters summed over all variables. Clusters with the greatest similarity are combined at each stage (Hair et al, 1995).

where z is the standardized value, x the original value of the variable, μ the mean value, and σ the standard deviation.

The results of the cluster analysis are presented in the next section of the paper.

4. Cluster analysis

Cluster analysis was conducted on three separate samples: (i) cities and municipalities in Eastern Croatia, (ii) cities in Eastern Croatia and (iii) municipalities in Eastern Croatia. Descriptive statistics for 127 local governments of Eastern Croatia is shown in Table 2. Since the data cover 22 cities and 105 municipalities, the large differences in the summary statistics are understandable with cities enjoying a higher level of income pc and fiscal capacity.

Table 2: *Summary statistics (average values 2014-2017)*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
Min.	0.00	6,901	503	14.66	2.87	4.78
Median	2.50	20,018	1,230	24.24	10.58	25.12
Mean	2.40	20,132	1,358	25.20	12.08	25.74
Max.	5.00	33,923	3,347	46.10	40.20	54.94

Source: Authors' calculations

Descriptive statistics for 22 cites of Eastern Croatia are shown in Table 3.

Table 3: *Summary statistics cities (average values 2014-2017)*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
Min.	0.75	19,332	862	14.66	2.88	7.34
Median	2.75	25,948	1,950	19.75	9.56	19.38
Mean	2.73	25,613	1,833	20.66	11.12	20.40
Max.	5.00	33,923	2,935	29.63	38.09	34.06

Source: Authors' calculations

Descriptive statistics for 105 municipalities of Eastern Croatia are shown in Table 4. When compares data from Table 3 and Table 4 it is evident that cities are more transparent and have better economic and fiscal outcomes.

Table 4: *Summary statistics municipalities (average values 2014-2017)*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
Min.	0.00	6,901	503	14.84	2.87	4.78
Median	2.50	19,363	1,136	25.71	10.66	26.24
Mean	2.33	18,983	1,259	26.15	12.28	26.86
Max.	4.25	26,463	3,347	46.10	40.20	54.94

Source: Authors' calculations

Table A in the Appendix lists all municipalities and cities that are divided into four clusters. Municipalities and cities belonging to these four clusters are also presented in Graph A, highlighting the lowest (cluster 1) and highest performers (cluster 4).[3]

[3] The tables for cities and municipalities separately are available upon request and have been excluded due to conference guidelines.

The results of cluster analysis are presented in Table 5. Four clusters have been determined and it should be noted that variables included in the analysis show different contributions to the clustering. The share of surplus/deficit in total revenues (variable bal_total_rev) had the largest contribution (interval), ranging from -0.49 (cluster 4) to 3.29 (cluster 2), while the share of surplus/deficit in total operating revenues (variable bal_oper_rev) had the smallest interval (-0.64 in cluster 4 to 0.34 in cluster 1).

Table 5: *Cluster means of all cities and municipalities in Eastern Croatia*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
1	1.90 (-0.45)	17,450 (-0.63)	1,007 (-0.67)	25.62 (0.06)	11.23 (-0.12)	29.12 (0.34)
2	2.63 (0.20)	18,248 (-0.44)	1,243 (-0.22)	24.47 (-0.10)	35.89 (3.29)	26.43 (0.07)
3	2.71 (0.28)	22,123 (0.47)	1,642 (0.54)	25.50 (0.04)	10.79 (-0.18)	22.94 (-0.28)
4	4.15 (1.58)	29,472 (2.19)	2,152 (1.51)	17.66 (-1.05)	8.51 (-0.49)	19.35 (-0.64)

Note: standardized values in parentheses

Two clusters are singled out whose mean values show the following. Cluster 1 encompasses local governments that we could label as lowest performers – with the lowest level of political accountability, resident income pc and fiscal capacity pc, the highest unemployment rate and operating revenue imbalance. Cluster 4, however, includes highest performers, the local governments with the highest level of political accountability, resident income pc and fiscal capacity pc, as well as the lowest unemployment rate, operating revenue imbalance and total revenue imbalance.

Based on the cluster analysis results one can conclude that there is a positive correlation between budget outcomes and political accountability. Local governments that report better budget outcomes (lower levels of deficit regardless of the measure) also report higher levels of political accountability. These results are in line with the Benito and Bastida (2009) research on a sample of 41 countries and since cluster 4 consists exclusively of cities, these results confirm finding of Erjavec et al (2017) that cities are fiscally conservative in Croatia. Reporting the only other research that looks at the net operating balance, this paper confirms the conclusion reached by Turley et al (2015) as well as findings of Caamano-Alegre et al. (2013) on the correlation between unemployment and fiscal transparency.

One possible explanation as to why municipalities report a lower budget outcome than cities could relate to municipalities being unable to use local public utility companies to circumvent legislative constraints on budget deficit and debt (Bajo and Primorac, 2010). Since creative accounting is out of the question it seems that transparency (OLBI) and political accountability are also out of the question.

The results of cluster analysis for municipalities are presented in Table 6. Three clusters have been determined and it should be noted that variables included in the analysis show different contributions to the clustering. The share of surplus/deficit in total revenues (variable bal_total_rev) made the largest contribution (interval), ranging from -0.25 (cluster 3) to 2.46 (cluster 1), while the share of surplus/deficit in total operating revenues (variable bal_oper_rev) had the smallest interval (-0.06 in cluster 1 and 3 to 0.03 in cluster 2).

Table 6: *Cluster means of municipalities in Eastern Croatia*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
1	1.78 (-0.52)	17,419 (-0.45)	1,065 (-0.41)	27.77 (0.22)	29.88 (2.46)	26.24 (-0.06)
2	2.10 (-0.22)	17,976 (-0.29)	1,073 (-0.39)	26.46 (0.04)	10.95 (-0.19)	27.13 (0.03)
3	3.13 (0.76)	22,215 (0.93)	1,826 (1.19)	24.80 (-0.18)	10.50 (-0.25)	26.28 (-0.06)

Note: standardized values in parentheses

Cluster 1 encompasses local governments that we could label as lowest performers. These are local governments with the lowest level of political accountability, resident income pc and fiscal capacity pc, us well us highest unemployment rate, operating revenue imbalance and total revenue imbalance. On the other hand, cluster 3 includes highest performers, the local governments with the highest level of political accountability, resident income pc and fiscal capacity pc, as well as the lowest unemployment rate, operating revenue imbalance and total revenue imbalance.

The results of cluster analysis for cities are presented in Table 7. Two clusters have been determined and it should be noted that the variables included in the analysis show different contributions to the clustering. The level of political accountability (variable OLBI) made the largest contribution (interval), ranging from -0.61 (cluster 1) to 0.73 (cluster 2), while the share of surplus/deficit in total operating revenues (variable bal_oper_rev) had the smallest interval (-0.15 in cluster 2 to 0.13 in cluster 1).

Table 7: *Cluster means of cities in Eastern Croatia*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
1	1.94 (-0.61)	23,553 (-0.61)	1,609 (-0.47)	22.96 (0.55)	11.22 (0.01)	21.49 (0.13)
2	3.68 (0.73)	28,085 (0.73)	2,103 (0.57)	17.91 (-0.66)	11.01 (-0.01)	19.09 (-0.15)

Note: standardized values in parentheses

Cluster 1 encompasses local governments that we could label as lowest performers. These are local governments with the lowest level of political accountability, residents' income pc and fiscal capacity pc, the highest unemployment rate, operating revenue imbalance and total revenue imbalance. On the other hand, cluster 2 includes highest performers, the local governments with the highest level of political accountability, resident income pc and fiscal capacity pc, as well as the lowest unemployment rate, operating revenue imbalance and total revenue imbalance.

5. Conclusion

This paper represents the first attempt to connect the issue of political accountability via the budget transparency channel and the resulting budget outcome in the local governments in Croatia. It is also novel in the sense that it looks at the budget outcome first as the share of surplus/deficit in total operating revenues, but then also as the share of surplus/deficit in total revenues.

Several interesting results come from this research. For the period 2014-2017 Eastern Croatia is among the two regions (together with Dalmatia) that exhibit the lowest levels of OLBI (our proxy for political accountability) as well as the lowest budget outcomes (especially one measured by operating revenues imbalance). Since it lacks rents from tourism, this is especially

troubling for the citizens of this region. Their levels of disposable income could increase if the incumbent acted in a manner of good governor and allocated public funds in the optimal way (transparency channel increases the level of accountability measured by OLBI).

By using cluster analysis for confirmatory purposes on all three levels (cities plus municipalities, cities and municipalities separately) of local governments in Eastern Croatia, the research provided following results. In the total sample (cities plus municipalities), the hierarchical cluster analysis pointed to four key clusters, out of which we can determine:

- lowest performers (local governments with the lowest level of political accountability, resident income pc and fiscal capacity pc, as well as highest unemployment rate and the biggest operating revenues imbalance)
- highest performers (local governments with the highest level of political accountability, resident income pc and fiscal capacity pc, as well as the lowest unemployment rate, operating revenues imbalance and total revenues imbalance).

In the municipalities sample the hierarchical cluster analysis pointed to three key clusters out of which we could again determine:

- lowest performers (local governments with the lowest level of political accountability, resident income pc and fiscal capacity pc, as well as highest unemployment rate, operating revenue imbalance and total revenue imbalance)
- highest performers (local governments with the highest level of political accountability, resident income pc and fiscal capacity pc, as well as the lowest unemployment rate, operating revenue imbalance and total revenue imbalance).

In the cities sample we the confirmed previous findings with the hierarchical cluster analysis pointing to two key clusters.

The policy implications of this study are rather straightforward – political accountability and transparency matter! Future research avenues could focus on the role of the media, voter sophistication and the accounting practices of local governments. With respect to methodological improvements, a more robust empirical investigation (a panel model) could complement and further improve these results.

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Appendix

Table A: *Results of the cluster analysis (cities and municipalities).*

local government	county	OLBI	income_pc	fiscal_cap_pc	unempl_rate	bal_total_rev	bal_oper_rev
Cluster 1 – lowest performers							
Bebrina	Brod-Posavina	3.3	17,576	768	19.5	8.4	30.2
Brodski Stupnik	Brod-Posavina	3.5	22,206	969	15.2	19.5	39.7
Bukovlje	Brod-Posavina	3	19,784	970	15.8	22.4	38
Davor	Brod-Posavina	0.8	16,418	776	26.9	10.6	38.4
Donji Andrijevci	Brod-Posavina	2.5	20,167	1,013	17.5	5.6	39.5
Garčin	Brod-Posavina	2.5	20,322	1,086	18.6	5.3	25.1
Gornja Vrba	Brod-Posavina	3	18,475	1,261	16.9	12.3	31.8
Gornji Bogićevci	Brod-Posavina	1.8	14,300	955	42	8.9	38.4
Klakar	Brod-Posavina	3.3	22,319	1,063	14.8	11.9	37.8
Nova Kapela	Brod-Posavina	1.5	21,663	1,150	24.3	8.2	23.7
Okučani	Brod-Posavina	1.3	15,537	814	42.3	4.1	22.8
Oprisavci	Brod-Posavina	2.8	21,327	1,031	15.5	7.4	38.3
Podcrkavlje	Brod-Posavina	2	18,789	960	19.6	9	28.3
Rešetari	Brod-Posavina	1.8	19,322	855	28.5	2.9	39.4
Sibinj	Brod-Posavina	2.5	21,384	961	15.6	13.8	31.9
Sikirevci	Brod-Posavina	2	16,204	751	18	23.1	42.9
Slavonski Šamac	Brod-Posavina	2.5	14,134	757	20.4	5.6	37
Velika Kopanica	Brod-Posavina	1.3	17,404	1,089	16.5	5.5	32.6
Vrbje	Brod-Posavina	1	15,131	767	38.7	14.1	34.4
Vrpolje	Brod-Posavina	3	17,970	1,007	16.8	9.8	35.2
Drenje	Osijek-Baranja	0.8	15,317	675	30.8	12.8	19.5
Đurđenovac	Osijek-Baranja	0.8	20,332	1,002	32.4	15.5	22.3
Gorjani	Osijek-Baranja	0	18,682	1,433	25.3	13.4	26.2
Jagodnjak	Osijek-Baranja	2	14,814	1,324	46.1	17.9	17.5
Levanjska Varoš	Osijek-Baranja	1	12,043	869	40.5	15.3	17.4
Marijanci	Osijek-Baranja	1.8	19,770	1,468	23.8	14.9	30
Podgorač	Osijek-Baranja	3	15,792	1,403	41.2	12.7	17.1
Podravska	Osijek-Baranja	0	17,338	1,130	26.7	9.3	23.9
Punitovci	Osijek-Baranja	0	19,049	1,378	24.9	12.3	22.4
Satnica Đakovačka	Osijek-Baranja	2.5	17,429	1,092	26.6	6.7	33.2
Strizivojna	Osijek-Baranja	1	17,791	656	19.2	11.8	54.9
Trnava	Osijek-Baranja	0.3	16,105	898	29.7	25.9	17.3
Viškovci	Osijek-Baranja	1	19,691	985	25.7	9.9	31.3
Brestovac	Požega-Slavonia	2.8	19,771	1,011	19.2	9.1	29.7
Čaglin	Požega-Slavonia	2.3	14,246	939	20.1	13.5	24
Kutjevo (c)	Požega-Slavonia	0.8	20,598	1,025	16.7	13.5	34.1
Pleternica (c)	Požega-Slavonia	1.5	19,332	862	18.8	7.3	33.3
Velika	Požega-Slavonia	4	19,226	1,193	17.7	11.9	27.4
Čačinci	Virovitica-Podravina	2.5	9,556	1,243	23.9	8.2	22.3
Čađavica	Virovitica-Podravina	2	6,901	1,629	32.5	13.8	26.4
Mikleuš	Virovitica-Podravina	2.3	16,451	821	32	7.4	30.5
Sopje	Virovitica-Podravina	0.8	16,298	1,363	34.4	8.1	13.6
Špišić Bukovica	Virovitica-Podravina	1.5	15,981	1,127	27.1	6.1	34.8
Andrijaševci	Vukovar-Srijem	3.8	20,891	1,177	20.3	9.9	30.8
Babina Greda	Vukovar-Srijem	3	13,563	796	30.3	11	21

Borovo	Vukovar-Srijem	2.5	16,791	615	28.1	13.7	27.6
Bošnjaci	Vukovar-Srijem	1	17,870	1,099	31	3.5	8.4
Cerna	Vukovar-Srijem	2.8	20,198	1,175	23.3	8.7	21.7
Gradište	Vukovar-Srijem	1	18,313	862	26.9	14.2	41.8
Gunja	Vukovar-Srijem	1.3	13,152	832	44.3	10.7	41.3
Ivankovo	Vukovar-Srijem	2.3	20,332	966	20.6	14.3	16
Markušica	Vukovar-Srijem	2.3	13,548	714	32.4	12.1	24.6
Negoslavci	Vukovar-Srijem	1.3	17,328	503	24.3	7.2	16.8
Privlaka	Vukovar-Srijem	0.8	19,384	1,382	23.3	11.8	34.8
Štitar	Vukovar-Srijem	2.8	15,043	644	28.3	19.7	45.1
Trpinja	Vukovar-Srijem	1.8	15,914	1,136	26.9	4.9	10.8
Vođinci	Vukovar-Srijem	2.8	19,362	972	21.9	12.3	24.5
Cluster 2							
Gundinci	Brod-Posavina	3	15,666	800	18.6	32	17.8
Jakšić	Požega-Slavonia	2.5	20,492	938	15.8	40.2	38.5
Kaptol	Požega-Slavonia	2.5	17,554	895	18.9	35.7	27.8
Gradina	Virovitica-Podravina	2.3	15,335	1,148	34	32.8	20.9
Orahovica (c)	Virovitica-Podravina	3.8	27,561	2,181	18.4	38.1	22.6
Voćin	Virovitica-Podravina	1.8	12,879	1,496	41.1	36.6	30.9
local government	**county**	**OLBI**	**income_pc**	**fiscal_cap_pc**	**unempl_rate**	**bal_total_rev**	**bal_oper_rev**
Cluster 3							
Cernik	Brod-Posavina	4	21,366	1,043	28.8	4.5	30.3
Dragalić	Brod-Posavina	2.8	19,577	1,478	31	12.9	21.7
Nova Gradiška (c)	Brod-Posavina	2.5	25,741	1,956	24.1	4.1	27.1
Oriovac	Brod-Posavina	1.8	21,508	1,109	15.6	13.8	8.1
Stara Gradiška	Brod-Posavina	3.5	21,006	1,326	30.4	9.9	40.1
Staro Petrovo Selo	Brod-Posavina	3	18,870	1,071	30.6	19.9	39.7
Antunovac	Osijek-Baranja	3.8	26,463	1,480	18.3	7.1	22.7
Beli Manastir (c)	Osijek-Baranja	0.8	26,410	1,945	29.6	13.1	30.8
Belišće (c)	Osijek-Baranja	1.8	24,546	2,292	27.5	23.4	14.9
Bilje	Osijek-Baranja	2	26,442	1,758	20	17	22.1
Bizovac	Osijek-Baranja	4	23,079	1,441	24.2	5.9	25.5
Čeminac	Osijek-Baranja	0.3	24,228	2,477	23.8	7.6	19.3
Čepin	Osijek-Baranja	0.8	25,717	1,464	17.7	11.8	21.1
Darda	Osijek-Baranja	1.3	20,990	1,339	31.6	20.4	34.4
Donja Motičina	Osijek-Baranja	2	20,082	1,087	32.2	15.1	37.5
Donji Miholjac (c)	Osijek-Baranja	2.8	24,673	1,462	19.6	6.8	8.6
Draž	Osijek-Baranja	1.8	20,366	1,428	35	2.9	23.2
Đakovo (c)	Osijek-Baranja	2.5	22,981	1,398	20.2	12.6	24.8
Erdut	Osijek-Baranja	2.8	21,311	1,525	27	9.8	10
Ernestinovo	Osijek-Baranja	3	26,159	1,599	20.2	5.4	10.1
Feričanci	Osijek-Baranja	2.5	22,854	1,429	28.6	4.6	26.4
Kneževi Vinogradi	Osijek-Baranja	3.3	21,879	1,851	32.4	11	19.1
Koška	Osijek-Baranja	3	20,834	1,285	30.9	14.9	20.7
Magadenovac	Osijek-Baranja	2.3	19,279	3,347	27.8	8.9	15.2
Našice (c)	Osijek-Baranja	3	26,659	2,165	25.5	14.3	29.9
Petlovac	Osijek-Baranja	3	21,091	1,464	32.6	14.8	23.3
Petrijevci	Osijek-Baranja	3.3	23,325	1,554	20	9.9	29.5
Popovac	Osijek-Baranja	3	20,973	2,162	38.9	10.4	25.9
Semeljci	Osijek-Baranja	2.5	19,363	1,298	27.4	15.7	39.3
Šodolovci	Osijek-Baranja	3	17,456	1,100	36	8.2	18.6
Valpovo (c)	Osijek-Baranja	1,3	26,155	1,514	23.2	6.5	7.3
Viljevo	Osijek-Baranja	2,5	16,238	1,230	31.7	21.2	32
Vladislavci	Osijek-Baranja	3,8	19,951	1,385	24.2	5.4	27.1
Vuka	Osijek-Baranja	4,3	24,014	1,347	20.2	18.6	25.5
Lipik (c)	Požega-Slavonia	3,8	25,116	1,971	17.8	8.2	30.5
Požega (c)	Požega-Slavonia	2,8	28,133	1,954	14.7	15.2	17.7
Crnac	Virovitica-Podravina	3,8	19,470	2,362	29.5	19.4	19.4
Lukač	Virovitica-Podravina	4	18,143	1,372	28.1	6.9	19.3
Nova Bukovica	Virovitica-Podravina	2	20,700	2,352	32.2	20.8	38.5
Pitomača	Virovitica-Podravina	4	18,040	1,363	22	7.3	20.4
Slatina (c)	Virovitica-Podravina	3.3	23,157	1,609	24.8	10	18.5
Suhopolje	Virovitica-Podravina	2.8	17,744	1,163	30.7	10.2	13.8
Zdenci	Virovitica-Podravina	1.5	20,808	1,844	26.8	8.1	42.7
Bogdanovci	Vukovar-Srijem	2.3	20,455	1,027	28.3	7.6	4.8
Drenovci	Vukovar-Srijem	3.3	16,074	1,600	34.8	10.7	29.7
Ilok (c)	Vukovar-Srijem	2.3	22,472	1,054	20	11.7	8.6
Jarmina	Vukovar-Srijem	4	22,696	1,021	18.7	8.3	18.4
Lovas	Vukovar-Srijem	3.8	25,385	2,402	20.7	11.9	38.8
Nijemci	Vukovar-Srijem	3.8	20,970	2,335	24.1	17.7	39

Nuštar	Vukovar-Srijem	2.3	22,372	954	21	5.7	10.8
Otok (c)	Vukovar-Srijem	1	19,916	2,020	25.5	11.5	20
Stari Jankovci	Vukovar-Srijem	3.5	20,251	1,671	23.9	8.3	28.4
Stari Mikanovci	Vukovar-Srijem	2.5	20,018	1,060	21.9	4.8	8.7
Tompojevci	Vukovar-Srijem	3.8	23,231	1,640	25.4	17.1	41
Tordinci	Vukovar-Srijem	0.5	21,832	1,230	20.5	7.4	5.5
Tovarnik	Vukovar-Srijem	3.5	24,995	2,344	18.2	8.7	23.7
Vinkovci (c)	Vukovar-Srijem	1.5	27,426	2,033	16.9	2.9	12.6
Vrbanja	Vukovar-Srijem	3	19,027	2,542	28.5	5	20.5
Županja (c)	Vukovar-Srijem	4.3	25,256	2,133	23.1	3.1	10.7
Cluster 4 – highest performers							
Slavonski Brod (c)	Brod-Posavina	5	27,061	1,942	15.1	7.2	28
Osijek (c)	Osijek-Baranja	5	33,923	2,935	16.3	3.8	12.5
Pakrac (c)	Požega-Slavonia	3	28,036	1,870	17.8	7.6	16.4
Virovitica (c)	Virovitica-Podravina	3.8	28,583	2,250	18.3	9.2	18.7
Vukovar (c)	Vukovar-Srijem	4	29,756	1,762	20.7	14.9	21.1

Note: c denotes city

Graph A: *Map of Eastern Croatia, results of the cluster analysis (cities and municipalities), where cluster 1 are lowest performers, cluster 4 are highest performers.*