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POLITICAL ACCOUNTABILITY AND "VOTING-WITH-THE-FEET": EASTERN CROATIA VS. REMAINING CROATIAN REGIONS[1]

ABSTRACT

Emigration has established itself as one of the most discussed topics in economic and political discourse in Croatia in the last couple of years. Nevertheless, there is still no full account of the reasons behind emigration or of the underlying reasons for the regional differences in the trends and origins of emigration. The general aim of this paper is to fill the gap in the literature by investigating one of the numerous reasons for emigration – the link between Tiebout's economic model of local government (voting-with-the-feet) and local government political accountability proxied by online local budget transparency index (OLBT). The paper first divides all Croatian local government units (cities and municipalities) into six regions, finding that Eastern Croatia exhibits the highest emigration trends and among the lowest political accountability of all the regions. Based on that, cluster analysis is carried out on all 127 Eastern Croatian cities and municipalities over the 2014-2017 period to deepen the understanding of such a trend. The main results suggest that local population will more likely engage in emigration if their local government unit has lower political accountability, higher unemployment rate, lower resident income and lower fiscal capacity.

Key words: *political accountability, emigration, Eastern Croatia, cluster analysis*

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1. Introduction

Emigration – leaving one's place of residence or country to live elsewhere – is currently one of the most important topics in Croatia, since it leads to numerous mostly negative social and economic consequences (Čipin et al., 2014; Jurić, 2017).

Mostly due to inaccurate migration statistics, no proper estimate of the magnitude and nature of emigration in Croatia has been made (Draženović, Kunovac & Pripužić, 2018). Recently, relatively rarely, research papers have pointed to different motivations for emigration from Croatia. Božić and Burić (2005) argue that the potential Croatian emigrant is more often young and educated, coming from regions with greater economic problems and with a higher unemployment rate in search of better wages, working conditions or employment. In contrast, Jurić (2017) argues that it is not unemployment that is the most important factor of emigration from Croatia, rather the incapable politicians and expensive and poorly organized state (legal insecurity, institutional malfunction, corruption, nepotism, crime, etc.). His research indicates that Croatian society is morally crashed and that there is a clear link between poor political ethics, weak institutions and emigration. Draženović et al. (2018) show that emigration flows are much stronger in Croatian economically less developed regions and that both economic (measured by the difference in GDP pc and employment rate) and non-economic factors (capturing the benefit of EU accession, the level of corruption, population age and tertiary education) are relevant for emigration decisions.

This paper adds to the previous research by exploring another possible reason for emigration – the political accountability of Croatian local government units. The goal is to answer the question of whether Croatian citizens respond to the lesser political accountability of their local government unit by emigrating (voting-with-their-feet). In that sense, we are able to take advantage of the Tiebout's model and test it in a natural experiment. After 2013 (Croatia's EU accession), consumer-voters are (fully) mobile across the EU and we test whether the level of local government's political accountability contributes to these movements. In other words, we test whether the assumption of rational voters holds even under asymmetric budget information. Political accountability is proxied by the level of online local budget transparency (OLBT), measured annually by the number of key local budget documents (executive budget proposal, citizens' guide, enacted budget, mid-year and end-year reports) published in a timely way on local government websites (Ott, Bronić, Petrušić & Stanić, 2018). The idea of the paper is firstly to identify which Croatian region is most affected by emigration. After that, a cluster analysis is carried out on that region, using the average values for the period 2014-2017, to deepen the link between emigration, political accountability and several socio-economic and political factors believed to be important for emigration.

The rest of the paper is organized as follows: the next section gives a short literature review and sets the hypothesis, the third section explains the data and methodology, the fourth section gives results of the cluster analysis, while the fifth brings conclusions, limitations and suggestions for further research.

2. Literature review

There are numerous theories of migration (for an excellent overview see Wickramasinghe & Wimalaratana (2016)). Neoclassical economic theory argues that differentials in wages among regions, or countries cause people to move from low-wage, high-unemployment regions to high-wage, low-unemployment regions (Todaro, 1980). Although there is no theory covering all aspects of migration (Wickramasinghe & Wimalaratana, 2016), some other theories, such as push and pull factor theory, build on neoclassical theory arguing that since the decision to migrate for better jobs is related to the search for a higher-quality life, wage and unemployment differentials alone will not explain much about emigration. In fact, motivation for emigration is a combination of numerous social, economic, ethnic and politically related push and pull factors (Mansoor & Quillin, 2006). According to Lee (1966) migrations are complex phenomena and could be analysed in the context of push and pull factors. Push factors (in the area of origin) are: 1) changes in natural environment (e.g. natural disasters), 2) economic factors (e.g. weak opportunities for employment, low income, poor working and living conditions), 3) political factors (e.g. disagreement with the political system, lack of basic civil liberties), and 4) social factors, such as alienation from the community (inability to belong to and identify with the community) and the feeling of helplessness in the realization of social or personal goals. The most important pull factors (in the area of destination) are: 1) better economic opportunities (higher living standards, better earnings and employment opportunities), 2) the ability to acquire the desired education, specialization, etc., 3) relatives, neighbours or friends already living there and 4) better living conditions (climate, housing, schools, public services, etc., but also the political system of a country).

As mentioned above and according to public finance theory, one of the possible reasons for emigration is differences in the provision of local public goods and services. Namely, the market cannot force individuals to publicly declare their own wishes concerning the amount and price of public goods they are willing to pay for. Thus, the free-rider problem might occur with a less than optimal level of local public goods being provided (Rosen, 2004). However, Tiebout (1956) argued that the possibility of the individual to migrate from one local government unit to another enables the solution to the provision of the local public goods that is almost similar to the "optimal" market solution. According to his hypothesis, migration occurs in response to spatial differences of public goods. That is, local government units differ in the quality of public goods and services such as police and fire protection, education, hospitals, courts, beaches, parks, roads, or parking facilities which they offer at different prices (tax rates). In that situation, individuals (consumer-voters) can "vote with their feet" and migrate to the local government units that provide the level of local public goods and the level of taxes they prefer.

Obviously, analysis of the determinants of migration requires the use of indicators that accurately describe the attractiveness and deficiencies of some countries from the perspective of migrants within a particular economic, demographic, social and political context (Ravlik, 2014). In recent years, more and more studies have been involved in finding the different factors that could explain migrations. While some are mostly focused on international migration (e.g. de Haas, 2011; Ravlik, 2014; Sprenger, 2013), there are also within-country analyses, focusing on the determinants of local migration (Bover & Arellano, 1999; DaVanzo, 1978; Day, 1992). One of the most frequently used variables is the unemployment rate (Bover & Arellano, 2002; DaVanzo, 1978) which is usually found to be, in line with neoclassical theory, positively related to emigration. On the other hand, Antolin & Bover (1997) found that some unemployed

individuals do not respond by migrating, due to their particular family situations (for example being married to a working partner).

Some studies, in line with push and pull factor theory, showed that people emigrate from regions with high housing prices to places with more affordable prices (Antolin & Bover, 1997; Bover & Arellano, 2002); or that the lower the residents' income, the higher the probability of moving to more distant local governments (Widerstedt, 1998).
Other studies, in line with public finance theory, found that people move to local government areas that invest more in health and education (Day, 1992). Westerlund & Wyzan (1995) point that determinants of migration differ for short-distance and long-distance emigration, as well as for metropolitan and non-metropolitan areas. For non-metropolitan areas they demonstrated a negative relationship between the local per capita (pc) tax base and the probability of short-distance migration. They argue that the local pc tax base may be a significant determinant of migration from sparsely populated (non-metropolitan) areas, where it is difficult to free-ride on services provided by other localities. They found the tax rate to be a significant determinant of short-distance migratory behaviour only in metropolitan areas, arguing that the tax rate should matter in densely populated areas where such free-riding is possible. For long-distance migration, fiscal variables were not significant.

Adserà et al. (2016) find that political instability triggers emigration. Likewise, Lam (2002) shows that the lack of political confidence significantly increases emigration, while lack of economic confidence increases emigration by a lesser degree. Mansoor & Quillin (2006) argue that the results of simulations and the history of migration in Southern Europe and Ireland provide support for the proposition that the quality of life in migration-sending countries matters as a determinant of emigration. In their research, quality of life takes into account a variety of a country's attributes (including macroeconomic and financial sector policy, trade, social equity, business investment environment, environmental policy, and political accountability).

This paper aims to explore another possible reason for emigration – local government political accountability – hypothesizing that lower political accountability of local government unit encourages residents to greater emigration.

3. Data and Methodology

The first step in the analysis is to ascertain whether there are differences among Croatian regions in terms of emigration and political accountability. This will serve as a stepping point for selecting a region to be clustered. For distinguishing Croatian regions, this paper uses the territorial organization of the Tax Administration office (Tax Administration, 2019), which classifies Croatian counties into the following 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); and
6. Dalmatia (Zadar, Šibenik-Knin, Split-Dalmatia and Dubrovnik-Neretva county).

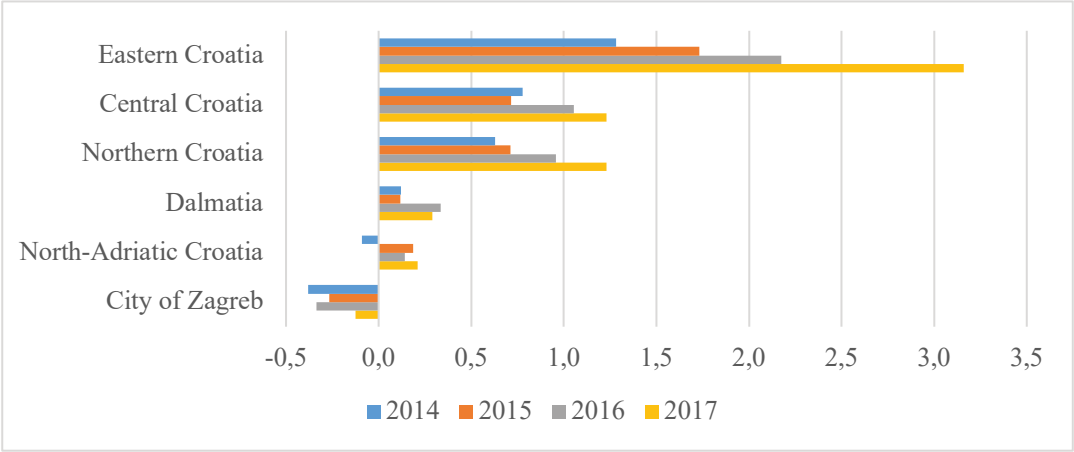
Accordingly, the first aim is to establish annual values of emigration and political accountability for each city/municipality in these six regions. The emigration is represented by the following equation:

$$er_{it} = \frac{em_{it} - im_{it}}{p_{it}} \; x \; 100, i = 1, \; \ldots N; \; t = 1, \; \ldots T \qquad (1)$$

where *er* represents emigration rate; *em* is the total number of emigrants; *im* is the total number of immigrants; *p* is the population estimate; *i* represents city/municipality (556 in total), and *t* is the year of observation for the 2014-2017 period (more information on data in the next section). Then, for each of the six regions, average values of emigration for the four-year period were calculated.

Graph 1 shows that in most regions in Croatia the emigration rate is increasing, only Zagreb having more immigrants than emigrants. Both Dalmatia and North-Adriatic Croatia have relatively low emigration rates. On the other hand, Eastern Croatia has the highest and most rapidly increasing emigration rate. In 2017 on average it amounted to more than 3% (graph 1).

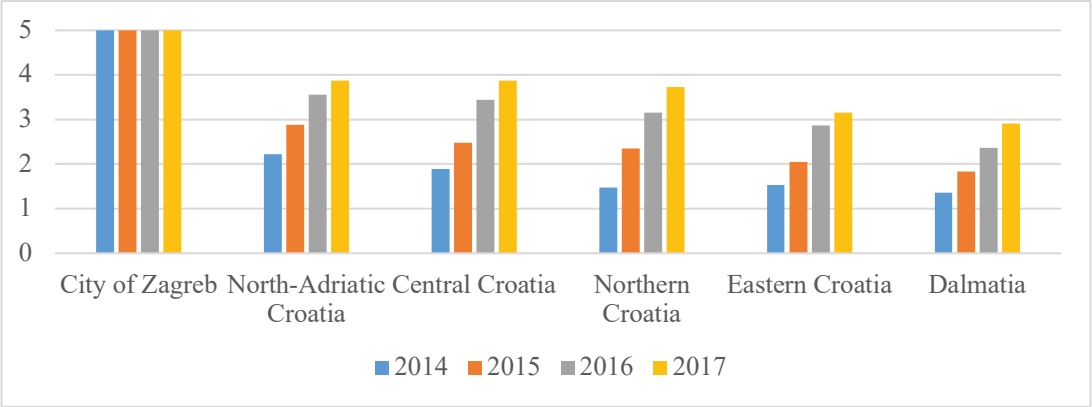
Graph 1: *Emigration rate for six Croatian regions (in %, average values)*



Source: Authors' calculations based on Croatian Bureau of Statistics (2019)

The political accountability of each city/municipality is proxied by the Open Local Budget Index (OLBI) calculated by Ott et al. (2018). This represents the city/municipality's ability and willingness to produce and publish annually on their respective official websites five key budget documents (budget proposal, enacted budget, citizens budget, mid-year report, and year-end report). Accordingly, the OLBI score for each local government unit can annually range from 0-5, depending on the number of published budget documents.

Graph 2: *OLBI score for six Croatian regions (average values)*



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

Except for the maximum transparency levels of the City of Zagreb, the remaining regions also show improvements in budget transparency over the years (graph 2). North-Adriatic Croatia and Central Croatia have the greatest achievements in OLBI scores (reaching a score of 3.88 in 2017). On the other hand, the smallest OLBI scores, or political accountability, are in Dalmatia and Eastern Croatia.

Graphs 1 and 2 indicate that Eastern Croatia has the convincingly highest emigration rate and very low political accountability. This is why the rest of the paper performs a cluster analysis, focusing explicitly on cities and municipalities of Eastern Croatia. Should there be a pattern to be discovered, this region could offer the most insights and observations.

4. Cluster analysis

Cluster analysis was carried out on all 127 local government units (22 cities and 105 municipalities) of Eastern Croatia. In addition to the emigration rate and political accountability, three more variables – unemployment rate, fiscal capacity of the municipality/city pc, and residents' income pc – have been added that could contribute to clustering, or in determining appropriate patterns associated with emigration (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. city's/municipality's 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 municipality /city	Obtained on request from the Ministry of Regional Development and EU Funds
emigr_rate	Emigration rate, calculated for each city/municipality as total number of emigrated minus total number of immigrated divided by population estimate for a given year.	Croatian Bureau of Statistics (2019).

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

Table 2, showing descriptive statistics, deserves a few comments. Namely, there are municipalities that did not publish any of the required budget documents in the period 2014-2017 (Gorjani, Podravska Moslavina and Punitovci, all from Osijek-Baranja County). On the other hand, two cities – Slavonski Brod and Osijek –published all five budget documents for the entire observed period. While the average value of pc resident income is over 20,000 HRK, in the municipalities of Čađavica and Čačinci (both in Virovitica-Podravina County) it is less than 10,000 HRK. Osijek has the highest average annual resident income pc – almost 34,000 HRK.

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

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	emigr_rate
Min	0.00	6,901	503	14.66	-0.66
Median	2.50	20,018	1,230	24.24	1.96
Mean	2.40	20,132	1,358	25.20	2.09
Max	5.00	33,923	3,347	46.10	5.67

When it comes to fiscal capacity pc, there are no significant deviations. However, the municipality of Negoslavci has very low average fiscal capacity pc (HRK 503), while, on the other hand, the municipality of Magadenovac has more than 3,000 HRK of own revenues (fiscal capacity) pc. Even the lowest average unemployment rate in this region is high (14.7% in the City of Požega). Seven municipalities have an average unemployment rate of over 40% (Jagodnjak, Gunja, Okučani, Gornji Bogićevci, Podgorač, Voćin and Levanjska Varoš). As shown in Graph 1, municipalities and cities in Eastern Croatia have higher average emigration rates than all other regions. Only the municipality of Čaglin has population growth, while two municipalities – Tovarnik and Stara Gradiška – have a four-year average emigration rate of more than 5%.

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:

$$z = \frac{x-\mu}{\sigma} \quad (2)$$

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

This paper uses a hierarchical clustering method that groups observation units based on hierarchical connectivity. A Ward hierarchical method with a Euclidean distance between the variables is used. The end result – represented by a dendrogram – points to a cut-off point at which four clusters are separated. However, it should be noted that variables included in the analysis show different contributions to the clustering. The largest contribution (interval) has resident income pc, ranging from -0.94 (cluster 1) to 1.97 (cluster 4). On the other hand, the clusterization is least affected by the emigration rate variable, which has the smallest interval (-0.52 in cluster 4 to 0.36 in cluster 1) (Table 3).

***Table 3**: Cluster means (original values)*

	OLBI	income_pc	fiscal_cap_pc	unempl_rate	emigr_rate
1	2.04 (-0.33)	16,113 (-0.94)	1,052 (-0.59)	31.87 (0.93)	2.44 (0.36)
2	2.38 (-0.02)	20,218 (0.02)	1,111 (-0.47)	20.94 (-0.59)	1.69 (-0.40)
3	2.52 (0.11)	22,977 (0.67)	1,968 (1.16)	25.71 (0.07)	2.43 (0.35)
4	3.88 (1.33)	28,521 (1.97)	2,108 (1.43)	17.39 (-1.09)	1.57 (-0.52)

Note: standardized values in parentheses

Table 3 points to two basic clusters that show certain patterns in the movements of the analysed variables:

- Cluster 1 includes local government units of Eastern Croatia most usually associated with the lowest political accountability, the lowest resident income pc, the lowest fiscal capacity pc, the highest unemployment rate and the highest rate of emigration;
- Cluster 4 includes local government units of Eastern Croatia most usually associated with the highest political accountability, the highest resident income pc, the highest fiscal capacity pc, the lowest unemployment rate and the lowest rate of emigration.

In line with neoclassical economic, push and pull factor and public finance theories these results indicate the following. It is more likely that the local population in Eastern Croatia will emigrate if their local government units show low political accountability and low fiscal capacity i.e. tax base, as argued by Mansoor & Quillin (2006) or Westerlund & Wyzan (1995). In addition, lower resident income and higher unemployment in local government unit – as argued by Bover & Arellano (2002), Božić & Burić (2005), Draženović et al. (2018), and Widerstedt (1998) – will also impose more pressure on the residents to search for solutions by way of emigration.

Municipalities and cities belonging to the above-mentioned four clusters are presented in Table A and Graph A in the Appendix. Table A shows that cluster 1 comprises only municipalities, and cluster 4 only cities. It also presents municipalities and cities that, according to the variables included in the analysis, have poorer results (lowest performers – cluster 1) and those with better results (highest performers – cluster 4). Cities generally show better performance in the analysed variables. This is particularly emphasized in the relationship between political accountability and emigration rate. While municipalities do not show the correlation between

these two variables, in the case of cities lower political accountability is associated with a higher emigration rate (results of correlations separately performed for municipalities and cities are available upon request).

5. Conclusion

This paper addresses the relationship between political accountability and emigration rate on the level of local government units in Eastern Croatia. Firstly, all Croatian local government units are divided into six regions – City of Zagreb, Central Croatia, Northern Croatia, Eastern Croatia, North-Adriatic Croatia, and Dalmatia – showing that the average emigration rate in Eastern Croatia in the period 2014-2017 is by far the greatest than in all other Croatian regions. At the same time, municipalities/cities of Eastern Croatia show rather low political accountability, as proxied by local budget transparency, i.e. the open local budget index (OLBI). Therefore, this paper focuses on Eastern Croatia, examining in more depth the possible reasons for emigration from its local government units. The analysis, along with political accountability variable, also includes the additional variables that might affect emigration – unemployment rate, resident income and fiscal capacity of the municipality/city. The hierarchical cluster analysis points to two key clusters, which depict movements of variables. The first includes local government units that show better results (highest performers) with lower emigration rates, higher political accountability, higher resident income, higher fiscal capacity, and lower unemployment rates. On the other hand, the second cluster presents local government units that are lagging behind (lowest performers). Accordingly, the local population of Eastern Croatia is more likely to emigrate from local government unit which has lower political accountability, lower resident income, lower fiscal capacity, and higher unemployment rates. Cities generally perform better in terms of all the analysed variables, showing also a better correlation between lower political accountability and higher emigration flows.

The policy implications of this study relate to recommendations to central and local governments to improve local budget transparency and to enable citizens to participate in local budgetary processes. This could lead to a more responsible local budgeting (positively improving institutions and local political ethics), a greater trust of citizens in local authorities, and lesser motivation for emigration.
The limitations of this analysis can be addressed in future research. Therefore, further studies could conduct a cluster analysis for other Croatian regions. An interesting research avenue could be to investigate the correlation between real estate/property values and the level of OLBI since this might act as an even better confirmation of the Tiebout's model (local governments are not perfect competitors and they face a downward sloping demand for residency). Also, in order to better understand the impact of political accountability, as well as other variables that could explain the emigration, future research could perform regression analysis, thus making use of the available panel dataset.

References

Adserà, A. et al. (2016): ***Political Factors as Drivers of International Migration***, Preliminary Draft; Mimeo.

Antolin, P. and Bover, O. (1997): ***Regional Migration in Spain: The Effect of Personal Characteristics and of Unemployment, Wage and House Price Differentials Using Pooled Cross-Sections***, Oxford Bulletin of Economics and Statistics, Vol. 59, No. 2, pp. 215–235. https://doi.org/10.1111/1468-0084.00061

Bover, O. and Arellano, M. (1999): ***Learning About Migration Decisions From the Migrants: An Excercise in Endogenous Sampling and Complementary Datasets,*** Working Papers, No. 9908,
https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosTrabajo/99/Fic/dt9908e.pdf

Bover, O. and Arellano, M. (2002): ***Learning about migration decisions from the migrants: Using complementary datasets to model intra-regional migrations in Spain***, Journal of Population Economics, Vol. 15, No. 2, pp. 357–380. https://doi.org/10.1007/s001480100066

Božić, S. and Burić, I. (2005): ***Migracijski potencijal Hrvatske - mikroanalitički aspekti,*** Migracijske i etničke teme, Vol. 21, No. 1–2, pp. 9–33.

Croatian Bureau of Statistics (2019): ***Statistika u nizu: gradovi u statistici***. Tab-3. Migration of population by towns and Tab-2. Population - estimate and natural change, https://www.dzs.hr/Hrv/publication/StatisticsInLine.htm, (accessed 20 January 2019)

Čipin, I. et al. 2014: ***Stručna podloga za izradu Strategije prostornog razvoja Republike Hrvatske: Demografski scenariji i migracije.*** Zagreb, http://www.hzpr.hr/UserDocsImages/propisi/Demografski_scenariji_i_migracije.pdf

DaVanzo, J. (1978): ***Does Unemployment Affect Migration? Evidence from Micro Data***, The Review of Economics and Statistics, Vol. 60, No. 4, pp. 504–514. https://doi.org/10.2307/1924242

Day, K. M. (1992): ***Interprovincial Migration and Local Public Goods***, The Canadian Journal of Economics, Vol. 25, No. 1, pp. 123–144. https://doi.org/10.2307/135714

de Haas, H. (2011): ***The determinants of international migration: Conceptualising policy, origin and destination effects,*** Working Papers; International Migration Institute, https://www.imi-n.org/publications/wp-32-11

Draženović, I., Kunovac, M. and Pripužić, D. (2018): ***Dynamics and determinants of emigration: the case of Croatia and the experience of new EU member states,*** Public Sector Economics, Vol. 42, No. 4, pp. 415–447. https://doi.org/10.3326.pse.42.4.3

Jurić, T. (2017): ***Suvremeno iseljavanje Hrvata u Njemačku: karakteristike i motivi***, Migracijske i etničke teme, Vol. 33, No. 3, pp. 337–371. https://doi.org/10.11567/met.33.3.4

Lam, K.-C. (2002): ***Interaction Between Economic and Political Factors in the Migration Decision,*** Journal of Comparative Economics, Vol. 30, No. 3, pp. 488–504. https://doi.org/10.1006/jcec.2002.1783

Lee, E. S. (1966): ***A Theory of Migration,*** Demography, Vol. 3, No. 1, pp. 47–57. https://doi.org/10.2307/2060063

Mansoor, A. and Quillin, B. (2006): ***Migration and Remittances: Eastern Europe and the Former Soviet Union,*** World Bank, Washington, DC. https://doi.org/10.1596/978-0-8213-6233-4

Ministry of Finance (2019): ***Lokalna samouprava: Financijski izvještaji JLP(R)S, PR-RAS i RAS-funkc za razdoblje 2014. - 2017.,*** http://www.mfin.hr/hr/financijski-izvjestaji-jlprs (accessed 27 January 2019)

Ott, K. et al (2018): ***Budget transparency in Croatian counties, cities and municipalities (November 2017 – March 2018)***, Newsletter - an Occasional Publication of the Institute of Public Finance, No. 115, pp. 1–14 https://doi.org/10.3326/nle.2018.115

Ravlik, M. (2014): ***Determinants of international migration: A global analysis,*** Higher School of Economics Research Paper No. WP BRP 52/SOC/2014. https://doi.org/10.2139/ssrn.2504441

Rosen, H. S. (2004): ***Public Finance***, in The Encyclopedia of Public Choice, Springer US, Boston, MA, pp. 252–262 https://doi.org/10.1007/978-0-306-47828-4_21

Sprenger, E. (2013): ***The determinants of international migration in the European Union: An empirical analysis,*** Working Papers 325, https://ideas.repec.org/p/ost/wpaper/325.html (accessed 27 January 2019)

Tax Administration (2019). ***Teritorijalni ustroj područnih ureda i ispostava***, https://www.porezna-uprava.hr/HR_o_nama/Stranice/TeritorUstroj.aspx (accessed 30 January 2019)

Tiebout, C. M. (1956): ***A Pure Theory of Local Expenditures,*** Journal of Political Economy, Vol. 64, No. 5, pp. 416–424. https://doi.org/10.1086/257839

Todaro, M. (1980): ***Internal Migration in Developing Countries: A Survey***, pp. 361–402, https://econpapers.repec.org/bookchap/nbrnberch/9668.htm (accessed 20 January 2019)

Westerlund, O. and Wyzan, M. L. (1995): ***Household Migration and the Local Public Sector: Evidence from Sweden, 1981-1984,*** Regional Studies, Vol. 29, No. 2, pp. 145–157 https://doi.org/10.1080/00343409512331348863

Wickramasinghe, A. A. I. N. and Wimalaratana, W. (2016): ***International migration and migration theories,*** Social Affairs: A Journal for the Social Sciences, Vol. 1, No. 5, pp. 13–32.

Widerstedt, B. (1998): ***Determinants of Long and Short Distance Migration in Sweden***, *Umeå Unive*, http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A766265&dswid=-5009 (accessed 20 January 2019)

Appendix

Table A: *Results of the cluster analysis, average 2014-17*

local_unit	county	OLBI	income_pc	fiscal_cap_pc	unempl_rate	emigr_rate
Cluster 1 - lowest performers						
Davor	Brod-P.	0.8	16,418	776	26.9	1.3
Gornji Bogićevci	Brod-P.	1.8	14,300	955	42.0	3.7
Okučani	Brod-P.	1.3	15,537	814	42.3	4.5
Rešetari	Brod-P.	1.8	19,322	855	28.5	1.6
Sikirevci	Brod-P.	2.0	16,204	751	18.0	2.8
Slavonski Šamac	Brod-P.	2.5	14,134	757	20.4	2.8
Staro Petrovo Selo	Brod-P.	3.0	18,870	1,071	30.6	2.2
Vrbje	Brod-P.	1.0	15,131	767	38.7	2.6
Donja Motičina	Osijek-B.	2.0	20,082	1,087	32.2	1.7
Draž	Osijek-B.	1.8	20,366	1,428	35.0	3.6
Drenje	Osijek-B.	0.8	15,317	675	30.8	2.1
Jagodnjak	Osijek-B.	2.0	14,814	1,324	46.1	2.0
Koška	Osijek-B.	3.0	20,834	1,285	30.9	1.6
Levanjska Varoš	Osijek-B.	1.0	12,043	869	40.5	1.1
Petlovac	Osijek-B.	3.0	21,091	1,464	32.6	2.3
Podgorač	Osijek-B.	3.0	15,792	1,403	41.2	1.8
Satnica Đakovačka	Osijek-B.	2.5	17,429	1,092	26.6	1.4
Semeljci	Osijek-B.	2.5	19,363	1,298	27.4	1.7
Šodolovci	Osijek-B.	3.0	17,456	1,100	36.0	2.2
Trnava	Osijek-B.	0.3	16,105	898	29.7	1.9
Viljevo	Osijek-B.	2.5	16,238	1,230	31.7	1.5
Kaptol	Požega-S.	2.5	17,554	895	18.9	3.9
Čačinci	Virovitica-P.	2.5	9,556	1,243	23.9	2.4
Čađavica	Virovitica-P.	2.0	6,901	1,629	32.5	1.2
Gradina	Virovitica-P.	2.3	15,335	1,148	34.0	2.1
Mikleuš	Virovitica-P.	2.3	16,451	821	32.0	3.8
Sopje	Virovitica-P.	0.8	16,298	1,363	34.4	1.2
Suhopolje	Virovitica-P.	2.8	17,744	1,163	30.7	1.5
Špišić Bukovica	Virovitica-P.	1.5	15,981	1,127	27.1	1.9
Voćin	Virovitica-P.	1.8	12,879	1,496	41.1	3.2
Babina Greda	Vukovar-S.	3.0	13,563	796	30.3	3.4
Bogdanovci	Vukovar-S.	2.3	20,455	1,027	28.3	3.1
Borovo	Vukovar-S.	2.5	16,791	615	28.1	2.9
Drenovci	Vukovar-S.	3.3	16,074	1,600	34.8	2.9
Gradište	Vukovar-S.	1.0	18,313	862	26.9	3.1
Gunja	Vukovar-S.	1.3	13,152	832	44.3	3.6
Markušica	Vukovar-S.	2.3	13,548	714	32.4	2.0
Štitar	Vukovar-S.	2.8	15,043	644	28.3	4.5
Trpinja	Vukovar-S.	1.8	15,914	1,136	26.9	2.2
Cluster 2						
Bebrina	Brod-P.	3.3	17,576	768	19.5	1.3
Brodski Stupnik	Brod-P.	3.5	22,206	969	15.2	2.1
Bukovlje	Brod-P.	3.0	19,784	970	15.8	1.3
Cernik	Brod-P.	4.0	21,366	1,043	28.8	2.2
Donji Andrijevci	Brod-P.	2.5	20,167	1,013	17.5	1.8
Garčin	Brod-P.	2.5	20,322	1,086	18.6	1.7
Gornja Vrba	Brod-P.	3.0	18,475	1,261	16.9	1.6
Gundinci	Brod-P.	3.0	15,666	800	18.6	1.9
Klakar	Brod-P.	3.3	22,319	1,063	14.8	1.2
Nova Kapela	Brod-P.	1.5	21,663	1,150	24.3	1.6
Oprisavci	Brod-P.	2.8	21,327	1,031	15.5	1.1
Oriovac	Brod-P.	1.8	21,508	1,109	15.6	1.6

local_unit	county	OLBI	income_pc	fiscal_cap_pc	unempl_rate	emigr_rate
Podcrkavlje	Brod-P.	2.0	18,789	960	19.6	1.4
Sibinj	Brod-P.	2.5	21,384	961	15.6	1.4
Velika Kopanica	Brod-P.	1.3	17,404	1,089	16.5	2.6
Vrpolje	Brod-P.	3.0	17,970	1,007	16.8	2.0
Antunovac	Osijek-B.	3.8	26,463	1,480	18.3	0.6
Bizovac	Osijek-B.	4.0	23,079	1,441	24.2	1.0
Darda	Osijek-B.	1.3	20,990	1,339	31.6	2.3
Donji Miholjac (c)	Osijek-B.	2.8	24,673	1,462	19.6	1.3
Đakovo (c)	Osijek-B.	2.5	22,981	1,398	20.2	1.3
Đurđenovac	Osijek-B.	0.8	20,332	1,002	32.4	1.7
Gorjani	Osijek-B.	0.0	18,682	1,433	25.3	1.2
Petrijevci	Osijek-B.	3.3	23,325	1,554	20.0	1.0
Podravska Moslavina	Osijek-B.	0.0	17,338	1,130	26.7	2.2
Punitovci	Osijek-B.	0.0	19,049	1,378	24.9	1.2
Strizivojna	Osijek-B.	1.0	17,791	656	19.2	1.8
Viškovci	Osijek-B.	1.0	19,691	985	25.7	1.8
Vladislavci	Osijek-B.	3.8	19,951	1,385	24.2	2.2
Vuka	Osijek-B.	4.3	24,014	1,347	20.2	2.4
Brestovac	Požega-S.	2.8	19,771	1,011	19.2	2.5
Čaglin	Požega-S.	2.3	14,246	939	20.1	-0.7
Jakšić	Požega-S.	2.5	20,492	938	15.8	2.0
Kutjevo (c)	Požega-S.	0.8	20,598	1,025	16.7	2.8
Pleternica (c)	Požega-S.	1.5	19,332	862	18.8	2.1
Velika	Požega-S.	4.0	19,226	1,193	17.7	1.4
Lukač	Virovitica-P.	4.0	18,143	1,372	28.1	2.2
Pitomača	Virovitica-P.	4.0	18,040	1,363	22.0	0.7
Andrijaševci	Vukovar-S.	3.8	20,891	1,177	20.3	0.9
Bošnjaci	Vukovar-S.	1.0	17,870	1,099	31.0	2.5
Cerna	Vukovar-S.	2.8	20,198	1,175	23.3	2.5
Ilok (c)	Vukovar-S.	2.3	22,472	1,054	20.0	2.7
Ivankovo	Vukovar-S.	2.3	20,332	966	20.6	2.1
Jarmina	Vukovar-S.	4.0	22,696	1,021	18.7	1.1
Negoslavci	Vukovar-S.	1.3	17,328	503	24.3	2.3
Nuštar	Vukovar-S.	2.3	22,372	954	21.0	0.7
Privlaka	Vukovar-S.	0.8	19,384	1,382	23.3	2.2
Stari Mikanovci	Vukovar-S.	2.5	20,018	1,060	21.9	1.5
Tordinci	Vukovar-S.	0.5	21,832	1,230	20.5	2.1
Vođinci	Vukovar-S.	2.8	19,362	972	21.9	1.8
Cluster 3						
Dragalić	Brod-P.	2.8	19,577	1,478	31.0	3.0
Nova Gradiška (c)	Brod-P.	2.5	25,741	1,956	24.1	1.7
Stara Gradiška	Brod-P.	3.5	21,006	1,326	30.4	5.1
Beli Manastir (c)	Osijek-B.	0.8	26,410	1,945	29.6	2.4
Belišće (c)	Osijek-B.	1.8	24,546	2,292	27.5	1.3
Bilje	Osijek-B.	2.0	26,442	1,758	20.0	2.0
Čeminac	Osijek-B.	0.3	24,228	2,477	23.8	1.8
Čepin	Osijek-B.	0.8	25,717	1,464	17.7	1.6
Erdut	Osijek-B.	2.8	21,311	1,525	27.0	2.1
Ernestinovo	Osijek-B.	3.0	26,159	1,599	20.2	1.7
Feričanci	Osijek-B.	2.5	22,854	1,429	28.6	1.1
Kneževi Vinogradi	Osijek-B.	3.3	21,879	1,851	32.4	2.9
Magadenovac	Osijek-B.	2.3	19,279	3,347	27.8	1.2
Marijanci	Osijek-B.	1.8	19,770	1,468	23.8	1.4
Našice (c)	Osijek-B.	3.0	26,659	2,165	25.5	0.9
Popovac	Osijek-B.	3.0	20,973	2,162	38.9	4.2
Valpovo (c)	Osijek-B.	1.3	26,155	1,514	23.2	1.1
Crnac	Virovitica-P.	3.8	19,470	2,362	29.5	2.5

local_unit	county	OLBI	income_pc	fiscal_cap_pc	unempl_rate	emigr_rate
Nova Bukovica	Virovitica-P.	2.0	20,700	2,352	32.2	2.2
Slatina (c)	Virovitica-P.	3.3	23,157	1,609	24.8	1.6
Zdenci	Virovitica-P.	1.5	20,808	1,844	26.8	1.5
Lovas	Vukovar-S.	3.8	25,385	2,402	20.7	3.2
Nijemci	Vukovar-S.	3.8	20,970	2,335	24.1	2.9
Otok (c)	Vukovar-S.	1.0	19,916	2,020	25.5	2.9
Stari Jankovci	Vukovar-S.	3.5	20,251	1,671	23.9	2.6
Tompojevci	Vukovar-S.	3.8	23,231	1,640	25.4	4.5
Tovarnik	Vukovar-S.	3.5	24,995	2,344	18.2	5.7
Vinkovci (c)	Vukovar-S.	1.5	27,426	2,033	16.9	0.7
Vrbanja	Vukovar-S.	3.0	19,027	2,542	28.5	3.2
Županja (c)	Vukovar-S.	4.3	25,256	2,133	23.1	3.7
Cluster 4 - highest performers						
Slavonski Brod (c)	Brod-P.	5.0	27,061	1,942	15.1	1.5
Osijek (c)	Osijek-B.	5.0	33,923	2,935	16.3	0.5
Lipik (c)	Požega-S.	3.8	25,116	1,971	17.8	1.7
Pakrac (c)	Požega-S.	3.0	28,036	1,870	17.8	2.4
Požega (c)	Požega-S.	2.8	28,133	1,954	14.7	1.4
Orahovica (c)	Virovitica-P.	3.8	27,561	2,181	18.4	1.6
Virovitica (c)	Virovitica-P.	3.8	28,583	2,250	18.3	1.0
Vukovar (c)	Vukovar-S.	4.0	29,756	1,762	20.7	2.6

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.*