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# Decentralization Policies in Public Administration in Slovakia and the Czech Republic, and Their Impact on Building Offices' Scale Efficiency

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**Abstract:** Decentralization policy schemes (DPSs) in the public sector have been implemented in different ways by Slovakia and the Czech Republic. Both approaches have led to a transfer of competencies from state administration to self-government with the aim of improving the efficiency of the delivery of services. This paper presents a comparative scale efficiency analysis of the units performing services in the building order sector. The analysis is based on two unique regional datasets from two countries, Slovakia and the Czech Republic. The DPS implemented in Slovakia is based on the principle of voluntary cooperation of municipalities. In the case of the Czech building sector, the competencies have been transferred to the newly created municipalities with delegated or extended competencies. This study aims to contribute to the research on efficiency in public administration. We focused on the relationship between two types of DPSs, and units' scale efficiency. We also tried to determine whether a specific unit scale size could be identified as the most efficient. We employed a two-stage metafrontier approach based on procedures for evaluating program and managerial efficiency. The results show that different DP have not led to statistically significant differences in performance, and it is not possible to identify the most efficient building office scale size.

**Keywords:** decentralization; local self-governments; building sector; building offices; scale efficiency; data envelopment analysis; metafrontier

## 1. Introduction

After the dissolution of Czechoslovakia, in 1993, public administration reforms in the successor states of Slovakia and the Czech Republic led to two different decentralization policy schemes.

Public administration reforms and decentralization in the Slovak Republic (SR) and the Czech Republic (CR) have been necessary because of changes in the societal system due to the “velvet revolution” in 1989, and the prospective of both states being member of the EU (2004). In both countries (SR and CR), there has been a gradual transfer of competencies from the state to self-government, since the self-government was established as a new part of public administration, during the decentralization process. In order to build a democratic society, self-government needed to be strengthened by moving competencies that were originally executed only by the state institutions, for example, roads, registry, building order, social care, environment, sport, theatrical activities, education, tourism, health care, and regional development.

Many European states (especially Sweden, Denmark, the United Kingdom of Great Britain, and Northern Ireland), as well as Australia and New Zealand, have undergone territorial reforms (Laamanen and Haveri 2003), where central governments have transferred many competencies to municipalities, especially in economy, land-use planning, construction, education, culture, health care, registry office, and others (Nižňanský and Hamalová 2014). Similarly, decentralization of public administration, as an indicator of a modern state (Nižňanský and Hamalová 2014) and in support of public interests of citizens belonging to territorial units, are in progress in Slovakia and the Czech Republic (Meneguzzo et al. 2010).

One author (Collins 1997) has assessed public administration reform as follows: “The efforts of Central and Eastern European countries to become members of the European Union are another motives to address seriously public administration reform, as effective government is one of the conditions for membership set by the EU itself. However, rebuilding the public administration and redefining its role in society has proved to be an extremely difficult task in these states”.

The focus of this study is the sector of building order competencies (building permissions, zoning plans and occupancy permit decisions) that were transferred from the state institutions to self-government bodies of municipalities. One of the reason of our focus on these competencies is the totally different legislation relating to services provided in the building order sector in both states (in the Slovak Republic, the still valid Act on building order No. 50/1976 Coll., as amended, and, in the CR, a new Act No. 183/2006 Coll. on building order, as amended).

The Czech Building Act established the categorization of municipalities by adopting Act No. 314/2002 Coll. on designation of municipalities with delegated competencies and designation of municipalities with extended competencies, where municipal offices performing building competencies are strictly listed in the act. Such legislation is missing in the Slovak legislation, as the amendment of Act No. 50/1976 Coll. defines all the municipalities as building authorities and it also states that “the building competence is transferred competence from the state authorities”.

Given that the especially small municipalities in the Slovak Republic have failed to provide services in the building order sector, they began to use the regulation of amendments to the Act on Municipal Establishment No. 453/2001 Coll. to conclude contracts among themselves for the purpose of implementing the issuance of building, occupancy permits, and zoning decisions, and therefore started to create joint building offices.

According to the (Ministry of Interior SR 2018), there are 189 joint building offices in Slovakia, and the Slovak Republic currently comprises 2927 municipalities (Bačík 2019).

Financial support by the Slovak state budget relating to the transferred competences to municipalities is regulated by § 6 par. 2 of Act No. 523/2004 Coll. on budgetary rules of public administration, however, these financial resources are not sufficient, which has led municipalities, at the level of the building competencies, to merge into joint building offices serving numerous municipalities (BON).

The joint building offices in Slovakia have been established by incidental contracts, concluded among municipalities, and no precise legislation stipulates the seats of BON, as in the case of registry offices. Their number and seats are determined by Act No. 154/1994 Coll. on registers, as amended. On the basis of our research, and also the opinion of (Hamalová and Papánková 2005; Černěňko et al. 2017), one of the solutions would be, similar to the case of competencies at the register offices, provision of the transferred building competencies by municipal offices stated by special legislation. Similarly, the statutory list of territorial districts of municipal offices could, in our view, solve the uncoordinated establishment of joint building offices.

The transfer of competencies in Slovakia has been carried out in municipalities, and also in self-governing regions. Creating the latter level of self-government required two basic perspectives, a professional perspective and a political perspective. Both influence each other, resulting in extensive discussions containing contradictory arguments (Klimovský 2006). The implemented transfer of competencies is not fully supported by state financing, and this explains why the topic of the efficient

performance of transferred competencies is still interesting to policy makers and academics. Currently, the challenge of finding the most appropriate administrative unit for the performance of public services is valid.

The objective of reforms, in both countries, has been to make public administration more effective, and reforms have been based on the transfer of competencies from local state authorities to regional and local self-governments. Public administration reform should also lead to financial sustainability. At the time of the dissolution of Czechoslovakia, public administration in both countries was regulated by identical legal acts (Act No. 369/1990 Coll. on local self-governments and Act No. 472/1990 Coll. on organization of local state administration). Although both countries had implemented the basis of local government (the lowest self-government unit is the municipality) into their system of administration, it still happened under the conditions of a common federal state, and they could not activate their regional self-governing level even a few years after gaining independence. Paradoxically, the constitution of both republics envisaged the establishment of a regional self-government (Art. 64 of the Constitution of the Slovak Republic and Art. 99 of the Constitution of the Czech Republic). However, further development of the political situation in both Slovakia and the Czech Republic caused the second level of self-government to be of marginal interest to individual governments (Vrbinčík 2012).

As in the case of Slovakia, the Czech Republic faced the challenge of creating a regional level of self-government as a sign of a modern and democratic public administration. The existence of regions, i.e., higher territorial self-governing units, was already assumed by the text of the Constitution of the Czech Republic and the Slovak Republic (1992). However, just as in the conditions of Slovakia, the establishment of a regional level of self-government remained only in a declarative form. An important step towards the real creation of self-government, second-level self-government, was the adoption of Constitutional Act No. 347/1997 Coll. on the creation of higher territorial self-governing units, and on the amendment of the Constitutional Act of the Czech National Council No. 1/1993 Coll. The Act entered into force on 1 January 2000 and established self-governing regions as units for the exercise of territorial self-government (Act No. 347/1997 Coll.; Vrbinčík 2012).

The new self-governing regions in the Czech Republic did not automatically abolish the regions from 1960. At present, there is an unsatisfactory legislative situation, where the designation of the region relates to two different types of territorial units. This situation is caused by the impossibility of the immediate abolition of Act No. 36/1960 Coll. on territorial division of the State (Ministry of Interior CR 2017).

Solving the problems associated with the establishment of regions and their activities in the initial period is usually referred to as the first phase of territorial public administration reform. Currently, two of these problems are conceptually the most significant. The first, and most serious issue, is the financial security of the regions. The current state of affairs allows for the organization of regions and the performance of state administration to be done at a regional level (Ministry of Interior CR 2017).

In Slovakia, "The Conception of Decentralization and Modernization of Public Administration" was approved for the period from 2000 to 2004, in which more than 300 competencies were planned to be transferred from local and regional state authorities, to regional and local self-governments. The aim of the decentralization was to provide services closer to natural and legal persons. By the adoption of Act No. 416/2001 Coll. on the transfer of certain competencies from the state administration bodies to local and regional self-governments, as amended, all of the local self-governments in Slovakia were suddenly responsible for the performance of additional competencies in 36 fields (Nižňanský 2005). For the small local self-governments, the performance of all of the transferred competencies was not possible, and therefore these local self-governments looked for other options to ensure the performance of competencies required by law. Therefore, local self-governments (municipalities) began to conclude agreements, with the aim to create joint municipality offices in the field of certain competencies. According to (Žárska et al. 2010), "the main aim of associating municipalities into the joint offices is to create geographically larger units of local self-government, which will achieve higher efficiency, effectiveness, and optimization in the exercise of their competencies and providing public services".

Actually, effective Slovak legislation specifies the principle of volunteering in Act No. 369/1990 Coll., as amended, as the voluntary cooperation of municipalities and the equal status of all municipalities regarding the execution of all of their competencies. According to the §20 of the latter act, municipalities can cooperate on the basis of a contract concluded for the purpose of carrying out a specific task or activity. In the field of building order competencies, which is the focus sector of this paper, services are provided by either joint building offices serving numerous municipalities (BON), or building offices serving a single municipality (BOS).

In the Czech Republic, decentralization has been solved in a different way. The powers of the state government institutions have been transferred to self-government by Act No. 313/2002 Coll., amending the act on municipalities. Subsequently, three categories of municipalities have been defined by Act No. 314/2002 Coll. as follows: Municipalities of the first category, ensuring the basic performance of the original competencies; municipalities of second category, which are entrusted with the so-called delegated competencies; and the third category with so-called extended competencies. Competencies in building orders are performed by the offices of municipalities with delegated competencies (BOD) and by the offices of municipalities with extended competencies (BOE). According to the §13 of Czech Building Order, Act No. 183/2006 Sb., as amended, the municipal building offices are as follows:

- a) District office (in case of withdrawal of the building competencies from the municipal office with delegated competencies);
- b) Municipal office with delegated competencies (second category);
- c) Municipal office with so-called extended competencies (third category).

Jurisdiction is according to this act, executed by the above-mentioned building municipality offices, as transferred competencies from the state institutions to the municipalities (self-government)

The focus of this categorization has been to establish a new institute, namely, municipalities with extended competencies. These competencies have to be seen as a new element, especially in view of the former structures, in which Czech municipalities were differentiated into two categories. Moreover, on the one hand, the municipalities with extended powers have taken over the largest volume of competencies from the former district (state) offices in the Czech Republic. On the other hand, some of the municipalities with delegated competencies have lost certain competencies by the mentioned categorization (Klimovský 2010).

The objective of our study is to examine which decentralization policy has led to better efficiency, and to identify the most efficient building office scale size in Slovakia and the Czech Republic. Our analysis is focused on the comparable competencies in the field of building (construction) order which were transferred from the state administration to the local self-governments.

As for Slovakia, Act No. 416/2001 Coll. on the transfer of certain competencies from the state administration bodies to local and regional self-governments (so-called small competence act), transferred the competencies in the building order sector from the state institutions to the municipalities. Subsequently, according to §20 of Act No. 453/2001 Coll., amending Act 369/1990 Coll. on local self-governments, municipalities started to use the possibility of cooperating with other municipalities, on the basis of a special contract concluded for the purpose of carrying out a specific task or activity in the building order sector. This amendment allowed for merging of the local municipality offices for the performance of building competencies, thereby jointly performing building competencies for numerous municipalities (BON).

The Slovak Republic currently comprises 2927 municipalities (Bačík 2019). According to the cooperation contracts of building orders, there are altogether 490 building offices, of which there are 189 BON and 301 BOS (Slovak Ministry of Interior 2018). The population of Slovakia is currently around 5,450,421 residents (Slovak Statistical Office 2018).

Regarding the relationship between the local self-government of the Czech Republic and state administration, the categorization of municipalities has caused, among other things, preconditions for the functional modification of some municipal authorities, in which the impacts have been

different in municipalities of different categories. The local settlement structure comprises many small municipalities, and only a relatively small number of medium and large towns. (Klimovský 2010).

In the Czech Republic, there are 6258 municipalities (Czech Statistical Office 2017) with a basic range of delegated powers. The competencies in the building order sector are performed by 593 municipal offices, of which 393 have delegated competencies (BOD) and 205 municipalities have extended competencies (BOE) (Ministry of Regional Development CR 2014), and according to Act No. 183/2006 Coll. on territorial planning and building offices in the §13, the municipal offices with an extended scope are determined as building offices, in reference to Act No. 314/2002 Coll., as amended. The population of the Czech Republic is currently around 10,649,800 residents (Czech Statistical Office 2019).

According to (Bryson 2008), all of the 6258 municipalities (extant in 2004) execute self-government with the same basic scope of operations the state delegates to them. To more than 380 municipalities (extant in 2004), the state extends an additional delegated authority. The greatest scope of authority is delegated to 205 of these 380 municipalities, which perform state administration for the central government, while also governing themselves within the sphere granted by the constitution and legislation.

Since 2006, public expenditure in the Czech Republic has been implemented by a specific methodology. The Ministry of the Interior has developed a methodology for the calculation of the contribution to the transferred competencies in the Czech Republic, based on the following criteria: size of administrative district and ratio of center unit to administrative district (MICZ 2019). This methodology is annually updated by an appendix of the Act on the State Budget of the Czech Republic (e.g., for 2019—Act No. 336/2018 Coll.). The financial provision of the transferred competencies to municipalities in Slovakia is regulated by §6, paragraph 2 of Act No. 523/2004 Coll., on the budgetary rules of public administration; however, these resources are not sufficient, which leads municipalities to merge into the joint building offices.

There are a large number of studies focusing on the efficiency analysis of public administration units. Numerous studies analyze global municipal efficiency at the level of a country, taking into account all or at least several competencies, activities, and services provided by the municipalities. A review of such studies can be found in (Narbón-Perpiñá and De Witte 2018a, 2018b; Afonso and Fernandes 2008). Other groups of studies are focusing on the efficiency of a particular public service (see example in D'Inverno et al. 2018). In the existing literature on local government efficiency, a significant number of studies focus on international comparative efficiency analysis, mostly based on aggregate country data (Afonso et al. 2005). International efficiency comparisons of local public authorities based on individual data are less frequent. As an example, the study by (Grešová and Fuka 2018) analyzed the efficiency of providing public services in the building order sector by local self-governments in the Czech Republic and Slovakia, in terms of a managerial approach.

Decentralized public organizations have many advantages, however, can be inefficient because of the suboptimal organizational size (Dixon and Elston 2019). A number of studies on the efficiency of providing public services, therefore, ask the following questions: “What is the optimal scale size of a local self-government entity (municipality and jurisdiction) in terms of the residential population served?” and “Are there economies of scale associated with a specific range of sizes of local governments?” Literature reviews published by (Holzer 2013; Dhimitri 2018) and a reforms review by (Callanan 2011), indicate that there is no direct association between size and efficiency, and there is no optimum size of local authorities. In some studies, empirical findings suggest a U-shaped relationship between the population size and the cost of providing public services (Hortas-Rico and Ríos 2018).

In our study, we combined the three above-mentioned approaches, as follows: We applied an international comparison of efficiency based on the individual municipality non-aggregated data of two countries, analyzing scale efficiency in relation to two different legal policies.

Our objective was to analyze two decentralization policy schemes applied in Slovakia and the Czech Republic, after the dissolution of Czechoslovakia, and determine if they led to statistically significant differences in the scale efficiency of building offices. The secondary objective was to identify

what specific scale size of building offices was the most efficient, both within the analyzed regions and in an inter-country comparison.

Our results could be a useful contribution to existing literature on the topic of scale efficiency of local governments with relation to the effect of decentralization policies.

This paper is organized as follows: In Section, we introduce the problem and the scientific aim. In Section two, we describe samples of primary data used in the analysis and introduce a two-stage DEA-based approach employed in the policy efficiency analysis. In Section three, we present the characteristics of the used data and the results of the efficiency analysis. In Section four we summarize our conclusions.

## 2. Materials and Methods

In the analysis, we used primary data sampled within field research in the Nitra Region, Slovakia (from August 2015 to February 2016), and in the Pardubice Region, the Czech Republic (from May 2016 to November 2016), taken from (Fandel et al. 2018). The selected indicators are usually used in measuring efficiency and are key components in achieving more efficient administrative units. In the case of the Nitra Region, the input data were provided by the accounting offices of the municipalities, being the seats of the building offices, and the output data were provided by the seats of the building offices. In the case of the Pardubice Region, the input data were provided by different municipal units, being the seats of the building offices, and for the output data, we used the freely accessible data from the databases of the Institute for Spatial Development.

Within the last three decades of research in the field of local government efficiency, a large number of parametric (statistical and econometric) and non-parametric methods and techniques have been reported in the literature. The most frequently used are data envelopment analysis (DEA), free disposable hull (FDH), stochastic frontier analysis, and Shephard distance function (Narbón-Perpiñá and De Witte 2018a). Among these methods and techniques, data envelopment analysis is widely used because of its straightforward way of dealing with data, computation, and results interpretation. The DEA essentially calculates the efficiency of a given organization, with respect to the performance of other organizations producing the same goods or services, rather than against an idealized standard of performance. Given its non-parametric basis, it is possible to considerably vary the specification of the inputs and outputs, without the need to assume a particular functional form. The principle of the calculation of the technical efficiency (TE) measures is based on the calculation of the productivities of all the units, relative to the best practice units' productivity, which can be expressed as follows way:

$$TE = \frac{\text{Productivity of DMU}_o}{\max_j (\text{Productivity of DMU}_j)} = \frac{\frac{\text{Output of DMU}_o}{\text{Input of DMU}_o}}{\max_j \left( \frac{\text{Output of DMU}_j}{\text{Input of DMU}_j} \right)} \quad (1)$$

where  $DMU_o$  is an observed (analyzed) decision-making unit and  $DMU_j$  is the  $j$ th decision making unit out of  $N$  decision making units, creating a sample of units under evaluation.

Technical efficiency can be decomposed into pure technical efficiency and scale efficiency. The pure technical efficiency reflects the managerial performance of the decision-making units, whereas scale efficiency indicates the ability of units' management to operate in an optimal scale size.

In practical empirical efficiency analyses, we assume that in local governments, several inputs are used to generate several outputs. Then, the efficiency estimation principle, Equation (1), is applied by solving  $n$  linear programming problems of DEA.

To evaluate the impact of the decentralization policies employed in Slovakia and the Czech Republic on scale efficiency, we performed a two-stage approach based on the procedure by (Charnes et al. 1981) for "evaluating program and managerial efficiency". The procedure is explained in detail as follows:

Stage 1: Evaluating in-country efficiency

We assumed that within each country, there are building offices that are able to produce as many outputs as possible, given the inputs. We called them best practice offices or efficient offices. Inefficient offices have the potential to improve their performance by increasing their outputs, given the inputs, or by reducing their inputs, given the outputs. We assumed that inefficiency was due to (1) bad management of units and (2) operation of units in a non-optimal scale size.

For stage one, the input-oriented CCR DEA model (Charnes et al. 1978) assumes constant returns to scale (CRS) and the BCC DEA model (Banker et al. 1984) assumes variable returns to scale (VRS), and both are employed as follows:

$$\begin{aligned}
 & \text{(a) } \min \theta \\
 & \text{(b) } Y\lambda \geq y_o \\
 & \text{(c) } X\lambda \leq \theta x_o \\
 & \text{(d) } \lambda \geq 0 \text{ (CRS constraint)} \\
 & \text{(e) } 1'\lambda = 1 \text{ (VRS constraint),}
 \end{aligned} \tag{2}$$

where,  $\theta$  is the technical efficiency measure,  $\lambda$  is the  $N \times 1$  vector of intensity variables,  $Y$  is the  $S \times N$  matrix of the  $S$  outputs of  $N$  offices,  $X$  is the  $M \times N$  matrix of the  $M$  inputs of  $N$  offices,  $y_o$  is the  $S \times 1$  vector of the outputs of the office under observation, and  $x_o$  is the  $M \times 1$  vector of the inputs of the office under observation.

Equation (2) parts (a), (b), (c), and (d) represent the CCR DEA model and the optimal solution to the model is  $\theta^* = \text{CRS TE}$ . It indicates the overall technical efficiency of the office under observation. If  $\theta^* = 1$ , then the office under observation is efficient in terms of both the managerial and the scale efficiency. If  $\theta^* < 1$ , then the office is not efficient due to poor management of the office or non-optimal office scale size.

Equation (2) parts (a) to (e) represent the BCC DEA model. The optimal solution of this model,  $\theta^* = \text{VRS TE}$ , indicates the pure technical efficiency of the office under observation. If  $\theta^* = 1$ , then the office under observation is efficient in terms of managerial efficiency. If  $\theta^* < 1$ , then the office is inefficient due to poor management of the office.

The overall technical efficiency (CRS TE) is decomposed into pure technical efficiency (VRS TE) and scale efficiency (SE) to determine the main source of the technical efficiency, i.e.,  $\text{CRS TE} = \text{VRS TE} \times \text{SE}$ . The scale efficiency was calculated residually as a ratio of CRS TE and VRS TE, Equation (3), as follows:

$$\text{SE} = \text{CRS TE} / \text{VRS TE}. \tag{3}$$

Equations (2) and (3), assuming both constant returns to scale and variable returns to scale, were employed separately for Slovakia and the Czech Republic to analyze inefficiency sources specific for the building offices in the two countries.

#### Stage 2: Evaluating inter-country policy efficiency

To be able to measure the effect of country-specific decentralization policies on scale efficiency, the optimal scores of the overall technical efficiency,  $\theta^* = \text{CRS TE}$ , and the optimal values of intensity variables,  $\lambda^*$ , for each building office in each country, estimated in stage one employing CCR DEA, were then used to calculate the adjusted (target) values of the outputs and inputs. This adjustment process represents the elimination of managerial and scale inefficiency at a national level, and residual inefficiency then can be attributed to the effect of the different decentralization policies applied in the two countries.

The adjusted (target) values of the outputs and inputs (i.e., values if offices were fully efficient) were calculated using Equation (4), as follows:

$$\begin{aligned}
 \hat{y}_o &= Y\lambda^* \\
 \hat{x}_o &= \theta^* x_o,
 \end{aligned} \tag{4}$$

where  $\hat{y}_o$  represents the adjusted values of the outputs and  $\hat{x}_o$  represents the adjusted values of the inputs.

The target values of the outputs and inputs estimated by Equation (4) create metadata for the analysis of the impact of the country policies on offices' efficiency. Applying both the CCR DEA model and the BCC DEA model, Equation (2), on the merged metadata of both countries, we are able to, then, estimate the scale efficiency measures of offices relative to the best practice offices in both countries (metafrontier).

The scale efficiency measures in the inter-country analysis, generally, indicate a potential performance improvement of offices if they are scale efficient, or if they operate in optimal scale size. The higher average value of the scale efficiency in one country in comparison to the average value of the scale efficiency in another country may indicate a positive effect of the employed decentralization policy on scale efficiency, assuming the difference between the scale efficiency score distributions of the two countries is statistically significant. For the statistical significance testing the, Mann–Whitney–Wilcoxon rank-sum test was applied.

### 3. Results

The efficiency of municipal offices providing services in the building order sector has been analyzed on a 2014 data sample of 37 offices of the Nitra Region (NR), representing 353 municipalities, and 35 offices of the Pardubice Region (PR), representing 347 municipalities. As Table 1 shows, in the sample, there were 27 joint municipal building offices (BON) in the Nitra Region (NR) and 32 municipal offices with delegated competencies (BOD) in the Pardubice Region (PR). They provided services for 343 and 345 municipalities, respectively. Ten BOS offices in NR and three BOE offices in PR provided services for single municipalities.

**Table 1.** Descriptive statistics for offices of the Nitra and Pardubice Regions (2014). BON, joint municipal building offices; BOD, municipal offices with delegated competencies; BOS, building offices serving a single municipality; and BOE, offices of municipalities with extended competencies.

Descriptive Statistics	Nitra Region	Pardubice Region
Number of municipalities in the sample	353	347
Number of all building order offices	37	35
Number of BON/BOD building offices	27	32
Average number of municipalities per BON/BOD	13	11
Average resident population served by one building office	18,530	12,516
Average resident population served by one BON/BOD	22,230	13,382
Average resident population served by one BOS/BOE	8538	3282

One joint building office (BON/BOD) provides services, on average, for 13 municipalities in NR, and for 11 cooperating municipalities in PR. On average, both types of building offices in NR serve larger resident populations than in PR. As we have already mentioned in the introductory part of the paper, since 2002, Slovak municipalities, according to the so-called small competence act, started to create so-called BON municipal building offices, i.e., joint building offices for several/numerous municipalities, and thus to cooperate with other municipalities to perform the building competencies jointly.

In the Czech Republic, the decentralization policy scheme was implemented in a different way, since the building order sector transferred the competencies to offices of municipalities with so-called delegated competencies (BOD), and to offices of municipalities with so-called extended competencies (BOE). These municipalities are directly listed in the Czech Building Order Act No. 183/2006 Sb., as amended, and no contracts for building order services among municipalities are concluded, as it is in the Slovak Republic.

In the efficiency analysis, we employed four output variables representing the performance of the offices, and one input variable expressing the costs of services. As a proxy for the input, we used an aggregated cost of labor, energy, and other operational costs (office expenses, car operating costs, and

books, etc.). The output variables were selected to measure the typical services of the municipal offices in the building order sector, as follows:

1. Number of construction and certificate of occupancy permits issued per year;
2. Number of territorial decisions issued per year;
3. Number of additional construction permits issued per year;
4. Number of other decisions issued per year (confirmation on existence or non-existence of buildings, decision on demolition, complaints, offences, change of the use purpose or owner of the building, small sources permission, small construction announcement, confirmation on the age of building, and state construction supervision).

Descriptive statistics of the used input and output variables are shown in Table 2.

**Table 2.** Descriptive statistics of input and output variables.

Variables	Nitra Region			Pardubice Region		
	max	min	avg.	max	min	avg.
Input						
Labor, energy, and other operating costs (€)	231,501.8	462.2	33,720.1	431,005.4	13,418.3	69,028.1
Construction and certificate of occupancy permits	1020	2	176.8	550	2	63.7
Territorial decisions	58	0	12.0	608	17	122.6
Outputs						
Additional construction permits	54	0	9.7	47	0	5.8
Other decisions and statements	927	7	148.0	1485	54	319.5

The results for the in-country efficiency measures are presented in Table 3.

**Table 3.** Descriptive statistics of in-country efficiency measures. TE, technical efficiency and SE, scale efficiency.

Average Efficiency Measures	Nitra Region	Pardubice Region
Average CRS TE: all building offices	0.52	0.57
Average CRS TE: (BON/BOD)	0.50	<b>0.59</b>
Average CRS TE: (BOS/BOE)	<b>0.53</b>	0.36
Average VRS TE: all building offices	0.63	0.68
Average VRS TE: (BON/BOD)	<b>0.64</b>	<b>0.69</b>
Average VRS TE: (BOS/BOE)	0.57	0.58
Average SE: all building offices	0.84	0.85
Average SE: (BON/BOD)	0.83	<b>0.86</b>
Average SE: (BOS/BOE)	<b>0.88</b>	0.70

In the Nitra Region, disregarding the office type, building offices achieved on average more than 50% of the best practice office performances. The best average overall technical efficiency was shown by building offices serving a single municipality (BOS: CRS TE = 0.53). A similar result was obtained for the assessment of scale efficiency (BOS: SE = 0.88). BON offices exhibited the best average score in managerial efficiency (VRS TE). In the Pardubice Region, the results are not significantly different. The best average performance measured by all three efficiency measures was exhibited by the building offices of municipalities with delegated competencies (BOD). Decomposition of overall technical efficiency into pure technical and scale efficiency, in both regions, indicates that inefficiency was caused less by scale inefficiency and more by managerial inefficiency.

Because of the significant variability in the resident population served by one building office, we analyzed the relationship of the scale efficiency scores, and the building office size measured by the

served population. In Table 4, we show the average scale efficiency scores for six resident population intervals. In the Nitra Region, the best performing offices are those with a population size of 10,000 to 19,999 residents. In the Pardubice Region, the best performance was in the smallest population interval of 0 to 1999 residents. Further statistical analysis has shown that the relationship between the scale efficiency scores and resident population served by one building office is statistically insignificant in both regions.

**Table 4.** Descriptive statistics of the in-country scale efficiency measures.

Group	Resident Population Served by One Building Office		Average Scale Efficiency	
			Nitra Region	Pardubice Region
1	0	1999	0.699	<b>0.948</b>
2	2000	4999	0.745	0.771
3	5000	9999	0.914	0.897
4	10,000	19,999	<b>0.961</b>	0.802
5	20,000	49,999	0.958	0.882
6	50,000	and more	0.394	0.778

In stage two, we used the adjusted data of the offices by eliminating the sources of both managerial and scale inefficiency. Descriptive statistics of the adjusted data are presented in Table 5.

**Table 5.** Descriptive statistics of adjusted input and output variables.

Variables	Nitra Region			Pardubice Region		
	max	min	avg.	max	min	avg.
Input						
Labor, energy and other operating costs [€]	62,390.3	258.2	15,772.8	169,666.8	7038.4	37,136.5
Construction and certificate of occupancy permits	1020.0	4.0	188.3	591.9	24.6	122.6
Territorial decisions	58.0	0.0	12.1	608.0	25.2	127.1
Outputs						
Additional construction permits	54.0	0.0	9.8	50.9	2.1	11.2
Other decisions and statements	1048.3	7.0	201.8	2579.3	107.0	530.7

The model of Equation (2) employed on the merged adjusted metadata of both regions resulted in the scale efficiency measures, as presented in Table 6.

**Table 6.** Descriptive statistics of inter-country policy efficiency measures with respect to the office type.

Building Office type	Scale Efficiency Measures		
	Nitra Region	Pardubice Region	Difference NR-PR
All building offices	0.9980	0.9989	−0.0008
BON/BOD	0.9972	0.9992	−0.0021
BOS/BOE	0.9998	0.9950	0.0048

Assuming that the inter-country efficiency measures reflect the effect of the decentralization policies employed in the two countries, then the average efficiency scores (Table 6) show that the building offices of the Pardubice Region exhibit a better scale efficiency than the building offices of the Nitra Region in the following two cases: (1) in the average scale efficiency scores for all of the building offices, and (2) in the average efficiency scores of the BON- and BOD-type offices. Building offices serving a single municipality in the Nitra Region (BOS) perform better than those in the Pardubice Region (BOE). All of the differences are minor and statistically insignificant ( $z$ -score  $-1.10976$ ,  $p$ -value  $0.267$ , not significant at  $p < 0.05$ ).

An analysis of the scale efficiency scores, with respect to building office size or resident population served by one building office (Table 7), showed that there is no specific building office size that would perform better than another. The average measures of scale efficiency show that the Nitra Region building offices in the first two size intervals perform better than the offices in the Pardubice Region. The opposite situation is evident for size intervals of three to six. It can be interpreted that the Pardubice Region building offices with over 5000 residents in the population perform better. Again, all of the differences reported in Table 7 are negligible and statistically insignificant.

**Table 7.** Descriptive statistics of inter-country policy efficiency measures with respect to office size.

Group	Resident Population Served by One Building Office		Average Scale Efficiency		
			Nitra Region (NR)	Pardubice Region (PR)	Difference NR–PR
1	0	1999	1.0000	1.0000	0.0000
2	2000	4999	1.0000	0.9988	0.0012
3	5000	9999	0.9991	1.0000	−0.0009
4	10,000	19,999	0.9949	0.9969	−0.0020
5	20,000	49,999	0.9981	1.0000	−0.0019
6	50,000	and more	0.9965	1.0000	−0.0035

The results presented in Tables 6 and 7 show that the two different decentralization policies have not led to statistically significant differences in performance in the two representative regions. The scale efficiency in both countries exhibits a high degree of variation with respect to office size, measured by served resident population. There are probably some other factors influencing the variation in building offices' performance. We assume that such factors can be major investment activities and a prosperity of municipalities (single or associated in joint building offices) to generate a higher demand for building office services. The analysis, in this respect, can be a way to further research the field of municipal offices' performance.

#### 4. Discussion and Conclusions

This study examined the efficiency of local self-governments in the Czech Republic and Slovakia, after the implementation of the two different policy schemes within the decentralization of the public administration in both states. Common history and the identical public administration system at the moment of the dissolution of Czechoslovakia offered an opportunity to study and compare different developments in public administration efficiency after the dissolution of Czechoslovakia (1993). The results allow for a comparison of two different approaches, both implemented in order to reach more efficient administrative units.

The analysis was focused on the competencies in the field of the building (construction) order transferred from the state administration to local self-governments. In Slovakia, the competence is performed by either building offices serving a single municipality (BOS), or by joint building offices serving numerous municipalities (BON) based on a special contract.

In the Czech Republic, competencies in the building order sector are performed by offices of second category municipalities with delegated competencies (BOD), and the offices of third category municipalities with extended competencies (BOE). Both types of municipalities provide public services in the building order sector for a fixed number of surrounding municipalities, regulated by law.

As for public expenditures in the building sector, in the Czech Republic, they are implemented by a specific methodology, stipulated by a special law. This methodology is annually updated by an appendix of the Act on the State Budget of the Czech Republic (Act No. 336/2018 Coll.). The public expenditure of the transferred building competencies to municipalities in Slovakia is also regulated by a special act, Act No. 523/2004 Coll. on the budgetary rules of public administration. We have to

state that these resources are not sufficient, which leads the municipalities merging into joint building offices, BON.

We conducted research on data samples from two regions, the Nitra Region in Slovakia and the Pardubice Region in the Czech Republic. The sample from the Nitra Region consists of 37 offices representing 353 municipalities. The sample of the Pardubice Region represents 347 municipalities served by 35 offices. In general, joint building offices in the Nitra Region, on average, serve a higher number of municipalities than the offices in the Pardubice Region (13 vs. 11). The same relationship holds for the average resident population served by one joint building office (22,230 vs. 13,382).

The variables used in the efficiency analysis represented one input and four outputs. The data envelopment analysis (DEA) was applied as a technique for the estimation of the efficiency scores for the analyzed units. The analysis was performed in two stages. The purpose of the first stage was to estimate the in-country efficiency of the offices, and the second stage was the calculation of the adjusted values of the input and outputs by the residual elimination of managerial and scale inefficiency.

The results of the first stage show that joint building offices serving numerous municipalities (BON) in the Nitra Region are less efficient than the building offices serving only one municipality (BOS). This finding holds both for the overall efficiency (CRS TE) and scale efficiency (SE), and is against rational expectations. The BON offices exhibit the best average efficiency in managerial efficiency (VRS TE). The analysis done for the Pardubice Region shows the opposite results, but the result may be biased because of a low number of building offices serving a single municipality in the Pardubice Region.

Unexpected results were received from the scale efficiency (SE) analysis in the Nitra Region. The average SE of the building offices serving numerous municipalities (BON) is worse than SE of the building offices serving a single municipality (BOS). This indicates that the process of voluntary cooperation of the association of municipalities does not lead to more scale-efficient offices. In the Pardubice Region, municipalities with delegated competencies (BODs) are not less scale efficient than municipalities with extended competencies (BOEs) serving single municipalities. In both regions, managerial inefficiency prevails over scale inefficiency, and is a major factor of overall inefficiency.

The results of the second stage provide a picture of offices' scale efficiency in terms of policy effects. The average scale efficiency scores estimated against the metafrontier show that the Pardubice Region offices perform slightly better than the Nitra Region offices in terms of the average scale efficiency scores for all of the offices, and in terms of the average scale efficiency scores of the building offices of the BON/BOD type. The building offices serving a single municipality in the Nitra Region (BOS) perform better than the ones in the Pardubice Region (BOE), however, all of the differences are minor and statistically insignificant.

The results presented in this paper show that the two different decentralization policy schemes employed in the Czech Republic and Slovakia have not led to statistically significant differences in performance in the two representative regions. The scale efficiency analysis performed with respect to the office size, measured by served resident population, represented by six population intervals, has shown insignificant differences. This leads to the conclusion that it is not possible to identify the most efficient building office scale size either within an in-country analysis or within inter-country analysis, and it is also in accordance with the findings of (Blom-Hansen et al. 2016).

The results of our analysis indicate that there are probably some other factors influencing the variation in building offices' performance. We assume that such factors follow the major investment activities performed within a municipality, the prosperity of local business and, last not least, the prosperity of the local resident population. All of these factors generate a higher demand for building office services and may influence the efficiency of the building offices.

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