

Abstract: The aim of this paper is to assess the development of business activities in the Czech countryside in the period from 2008 to the present and to show possible limitations and perspectives of this area. The research was conducted by analysing economic entities located in rural municipalities in the peripheral areas of Western Bohemia. The assessment is based on the use of the Public Database of the Czech Statistical Office (statistics on economic entities, number of economic entities, number of economic entities created in 2008–2020) and a dataset on economic entities defunct in 2008–2021 provided by the Czech Statistical Office. We have analysed the economic entities by geographical location, size of municipality and industry specification. We use analysis of variance to assess whether the population size of a municipality has a statistically significant effect on the number of economic entities per 100 residents of the municipality, and we use visualization cartographic methods, density maps and cartograms to assess spatial differentiation. We have found that the nature of business activities in the study area is changing along the lines of urban locations, but, due to a number of factors, many rural economic entities are in a more economically precarious position.

Keywords: business activities, economic entities, periphery, rural areas, Western Bohemia

Souhrn: Cílem tohoto příspěvku je na příkladu vybraného území provést vyhodnocení vývoje podnikatelských aktivit na českém venkově v období od roku 2008 do současnosti a ukázat možná omezení i perspektivy tohoto prostoru. Výzkum byl proveden skrze analýzy ekonomických subjektů se sídlem ve venkovských obcích v periferních oblastech západních Čech. Hodnocení je založeno na využití Veřejné databáze Českého statistického úřadu (organizační statistika, počet ekonomických subjektů, počet vzniklých ekonomických subjektů v letech 2008–2020) a datového souboru o ekonomických subjektech zaniklých v letech 2008–2021, poskytnutých Českým statistickým úřadem. Ekonomické subjekty analyzujeme podle geografické lokalizace, velikostních skupin obcí a podle oborové specifikace. K ověření, zda má populační velikost obce statisticky významný vliv na počet ekonomických subjektů na 100 obyvatel v obci, využíváme analýzu rozptylu a k hodnocení prostorové diferenciaci vizualizační kartografické metody, mapu hustoty a kartogramy. Bylo zjištěno, že povaha podnikatelských aktivit se na zkoumaném území mění po vzoru urbánních lokalit, ale řada vlivů se podílí na tom, že mnoho vlastních ekonomických subjektů se dostává do ekonomicky nejistější pozice.

Klíčová slova: podnikatelské aktivity, ekonomické subjekty, periferie, venkov, západní Čechy, CZ-NACE

Highlights

- An overview of rural economic activity and recent changes.
- Business in rural municipalities in the area is mainly complicated by transport services.
- With a decrease of a population size the relative representation of agricultural entrepreneurs increases.
- The number of self-employed entrepreneurs has hardly changed with the population size.

1. Introduction

Across the OECD, rural regions cover 80% of the territory and are home to approximately 30% of the population; they provide not only almost all food, but also water, energy, timber, minerals and, last but not least, precious intangible natural and cultural heritage. Yet for many rural residents, businesses,

and communities, prosperity is difficult to achieve. Economic development and structural transformations tend to benefit urban areas' (OECD, 2020). To solve specific problems and make use of the opportunities that rural areas offer, the dominant approaches such as sectoral subsidies for agriculture or investments in the traditional understanding of competitiveness of a given place or region are not enough; it is necessary to strengthen the public sector, companies, non-profit organizations and relationships within the local community.

Although since the 1990s, the employment mentality has prevailed over business approaches among the rural population (Majerová & Herová, 2009), the development possibilities of rural municipalities through business activities are important and are more often examined. In our research, we focus on the economic background of the countryside and on businesses and entrepreneurship in rural areas. According to Anderson (2000), the economic performance of peripheral regions is below average. These regions also have limited labour resources (Pugh & Dubois 2021). Since the 1990s, agriculture has not been the dominant economic sector in the peripheral regions of the Czech Republic (Ženka et al., 2017; Ženka & Šťastná, 2021; Šťastná et al., 2022). The structure of the existing business sector in rural areas is characterized by small and medium-sized enterprises, with the exception of agricultural enterprises, as according to Vaňatová (2018), Czech agriculture is dominated by large enterprises. They farm two-thirds of agricultural land and account for up to 76% of livestock farming.

In terms of employment, the share of people economically dependent on agricultural activities is constantly decreasing. Between 1990 and 2000, the share of the economically active in agriculture, forestry and fishing decreased from 7.4% to 4.9% and after 2000, it continued to decrease, to 2.6% in 2020 (public database of the Czech Statistical Office, 2022). In contrast, the share of manufacturing is increasing in rural areas (Ženka et al., 2021).

A hundred years ago, services were more represented in the Plzeň and South Bohemian Regions (if we include maids and temporary labourers in this sector). The primary sector accounted for the second largest share of the economically active population, with auxiliary work force predominating in frequency (Vorobljevová & Novotná, 2021).

Recently, there has been a tendency in the Czech Republic for urban dwellers to move to the countryside. This is mainly due to the fact that the cost of living in cities is very high, the quality of the environment in cities does not meet people's requirements, it is often difficult to find an interesting job and starting one's own business requires greater investment. According to Píša & Hruška (2019), migration brings new entrepreneurial skills, knowledge and creativity to rural areas. On the other hand, Bosworth & Venhorst (2018) argue that traditional notions of these effects are no longer appropriate for today's hypermobile society, as migration of people does not mean "migration" of economic activities. In fact, without clear mechanisms for the infiltration of their human and financial capital into local rural economies, the migration of urban residents to rural regions could have a detrimental impact (Bosworth, 2012).

Through this research, we aim to find out how business activities in Czech rural areas have developed in the last fifteen years. We have focused mainly on small and medium-sized businesses based in rural municipalities. Our data source was the Register of Economic Entities. As a model territory, we have chosen rural municipalities with up to 3,000 residents in the peripheral area, specifically in the districts of municipalities with extended competence ('ORPs') in the Plzeň, Central Bohemian, South Bohemian and Ústí nad Labem Regions, located at the borders of the regions (Fig. 1), where we have been studying the rural areas in the long term. We assume that we can trace risk factors in these areas in terms of further development and look for ways to reduce these factors. First of all, we want to find out which types of business activities are present in the model area, and which business activities have been emerging and disappearing the most in the last 15 years.

2. Conditions for business activities in rural areas

Before the analysis itself, it is necessary to provide a theoretical framework to anchor the basic concepts in the study of rural areas, and especially peripheral areas. A rural area consists primarily of a natural

landscape characterised by biological production of food and raw materials for people and industry, as well as a network of smaller settlements and technical works (Svobodová & Věžník, 2014).

Countries use specific criteria for defining 'rural', which are often based on the population density of settlements; there is no universal agreement on population size that distinguishes between urban and rural populations (Hall & Page, 2006). From the economic point of view, a lower occupational diversity and an orientation towards agriculture still remain important characteristics (Maříková et al., 1996). Vavrouchová (2014) summarizes the most common approaches to defining rural areas into 4 groups (mostly based on settlement size or population density) and these do not mention economic structure.

To support rural prosperity, it is very important to build the expertise of local actors through co-producing knowledge, creating networks for exchanging expertise, and equipping local actors with methods and tools they can use (Lowe et al., 2019). Inherent expertise, according to Lowe et al. (2019), is generated through area-generated experiences and experiments, or is based on scientific, expert knowledge acquired outside the area that needs to be adapted to the specific context.

2.1 Economic activities in rural areas

Let us begin by briefly defining rural entrepreneurship. Kalantaridis (2006) works with this term as a label describing qualitatively specific entrepreneurship. Other authors, such as North & Smallbone (2006), use the term only to specify economic activities territorially. Our research is concerned with the study of economic activities in a selected area, not with theoretical concepts of entrepreneurship, so we will use the term rural entrepreneurship as employed by North & Smallbone (2006).

The structure of today's rural business sector is based on small and medium-sized enterprises. In the 1990s, the Czech countryside underwent great changes (in Western Europe, these had occurred earlier). Since the mid-1990s, agriculture has been replaced by manufacturing as the dominant economic sector in the Czech peripheral regions (Ženka et al., 2017; Ženka & Šťastná, 2021). Currently, Czech rural areas are among the most industrialised regions in the European Union (Vaishar & Šťastná, 2019; Ženka et al., 2021). In Czech municipalities with less than 3,000 inhabitants, manufacturing accounted for almost 25% of jobs in 2017 (Ženka et al., 2021, p. 43). However, services are essential for sustainable rural development.

Modernisation of agriculture has reduced the number of workers needed in this sector. Only fruit and vegetable cultivation has remained very labour intensive. The requirements for such work are often fulfilled by migrant workers (Woods, 2005, p. 262). Rural restructuring has caused the loss of jobs for many residents. Today, a predominantly agricultural economy is made up of a close-knit community, and commuting to work outside the countryside has become the norm for most rural residents due to the limited number of job opportunities (Woods, 2005, pp. 263–264). Thus, it can be said that economic restructuring has transformed the rural labour market. The experience of searching for work can be very negative for people living in rural areas. The barriers can include a lack of suitable skilled jobs, poor transport links or inadequate childcare services. Many people in rural areas do not have the opportunity to use all their skills and qualifications, and this is reflected in their income. People are thus trapped in low-wage jobs, resulting in poverty in rural areas (Woods, 2005, p. 266).

There was a time when rural community life seemed almost idyllic. Each village had a church, shops and a post office. The main visible manifestation of the changes in the contemporary countryside is rationalisation and closing down of private and public services. The loss of rural services and products is an overarching global economic and social process. However, when looking at changes in service provision, also national and regional factors are reflected in the geography of rural settlement (Woods, 2005, p. 96).

The rationalisation and concentration of services in rural areas is taking place in the context of increased levels of mobility. Residents of rural areas can more conveniently shop or use services in the town or city where they work. Spatial restructuring is part of the expansion of everyday life, but this results in the exclusion of some people in rural communities who are less mobile (elderly, children). These distances

may seem small when travelling by car, but for rural residents who do not drive or own a car, the journey is very difficult, especially given their age (Woods, 2005, pp. 103–104).

These problems have become more apparent in the last ten years in the peripheral Czech countryside. Grocery stores, post offices and other necessary services have often been closed down, and the number of small or medium-sized grocery stores that are part of the independent or traditional market has fallen by almost a third from 2000 to 2018 (Dostál, 2018). The Ministry of Industry and Trade is therefore involved in promoting rural services and has focused primarily on investment in small and medium-sized enterprises in wholesale and retail trade.

The implementation of business in rural municipalities is affected by poorer availability of necessary services. There are also problems in addressing potential customers, again mainly in connection with poorer transport availability. With good Internet coverage, input information can be obtained online. However, according to Duvivier & Bussièrè (2022), the positive effects of broadband are limited to municipalities with good initial conditions in terms of local economic climate, natural amenities and demographics. So, politically, the results of their study suggest that broadband is not a panacea. Another advantage of the rural environment is the possibility of locating the business further away from residential premises, for example on the outskirts of villages, in former agricultural areas that have been built in most rural settlements since the 1960s and are now often unused. This is convenient as some types of production can be disturbing, such as noisy traffic in a populated area of a settlement. A beginning entrepreneur then needs to have prepared a business plan, secured sales of the products and localized competition, as these are other important factors that affect the implementation of business activities (Pavlíková, 2002).

By finding other competitive advantages for business, rural areas can become more equal 'rivals' to cities, which could also lead to a lower outflow of inhabitants, often forced to move to larger settlements due to a lack of job opportunities (Štenclová 2005). The role of rural areas is therefore changing and agriculture is now being replaced by smaller industrial and construction establishments and services. Tourism is becoming more important. There is a long tradition of tourist interest in rural areas in the western world, where the recreation and tourism functions of rural areas are more important (Hall & Page 2006).

Tourism also plays a significant role in rural areas in the Czech Republic. Not only does it generate a significant part of the income of rural destinations, but it also reduces unemployment and creates interesting jobs for residents. Tourism thus builds on the second home phenomenon that began to develop in Czechia in the 1960s (Vágner et al., 2004). The fact that the countryside is still regarded as a bearer of traditions, folk culture, positive interpersonal relations and togetherness also contributes to the development of tourism. Rural tourism includes also winemaking, agrotourism and game hunting. However, tourism and related activities require investment that can be better achieved by combining the strengths of the public and business sectors.

2.1.1 Business in agriculture

Agricultural business is based on the production of food and industrial crops. Nowadays, when more and more people are placing emphasis on food quality, business in agriculture can also be economically beneficial (Jurgilevich et al., 2016). Small and medium-sized businesses are mostly related to the cultivation of vegetables, fruits, herbs, farming of livestock or poultry, very often based on the principle of organic farming, with profitability varying depending on the type of crop and the region in which the business is located (Ponti et al., 2012).

In the environment of the Czech Republic, it is advantageous to combine plant growing and animal farming, to grow different types of plants – vegetables, forage crops, legumes, cereals, etc., and also to breed different types of animals, including wild ones. However, this type of management requires a great deal of experience and management skills (Barták et al., 1996). Profitable business ventures for rural areas include raising carp in a pond, growing plants in a greenhouse, raising poultry for meat and eggs, raising pigs, cows, sheep, rabbits and other animals, growing seedlings and flowers, and growing elite seeds. For a more stable business, it is advisable to supplement agricultural production with further processing, e.g.,

processing and storage of agricultural products, preparation of berries, mushrooms, medicinal plants, production of canned cucumbers, tomatoes, eggplants and other vegetables, trade in agricultural products. Organic and natural products can be provided directly to local residents or offered to various farm outlets in the towns.

Due to the influence of a large number of factors beyond human control, many agricultural activities are very risky. The biggest risk is the actual growing of plants outdoors. Weather and changing climate conditions pose a big risk as to whether the money invested in growing plants will actually pay off. It is also necessary to observe crop rotation on the plots. Animal husbandry is also among the more volatile areas of earnings. Meat and milk prices are constantly changing and animal breeding is expensive both in terms of acquisition of young animals and their maintenance (Živělová & Jánský 2006).

2.1.2 Business in non-agricultural activities

If a rural area has a pleasant natural environment or various tourist attractions, this primary potential can be used for tourism business. Agritourism (the most common), ecotourism, wine tourism or gastrotourism can be considered specific types of rural tourism (Svobodová & Věžník, 2014, pp. 24–29). Ecotourism or offering natural and healthy products is a suitable complement to other types of business. The rural environment usually offers good conditions for setting up an online shop. A business option is also to operate a Partner post office branch (under the Czech Post ‘Partner Post Office’ project). Other opportunities include offering services to visitors, making souvenirs for sale, providing refreshments in a buffet or country café, or running a shop with seasonal produce.

Rural development can also be helped by business in crafts that use natural resources or need more space for the activity itself or storage. New rural business opportunities and an overview of rural business development projects is presented by Ježek (2020); in addition to the mentioned tourism promotion activities, he also describes a rising importance of business projects in new economic fields. New products include insulation materials made of wood, bioenergy production or reed insulation. Green economy saves the environment through its technology use practices and ensures the transition to carbon-free and resource-efficient operations, thereby delivering cost savings. Modern digital technology is a significant opportunity for rural areas to enter digital services markets. Insufficient access to high-speed internet and digital literacy are barriers. However, relying solely on digital services such as e-health or e-retail is not self-sustaining for rural areas. There is a need to provide for the basic needs of rural communities and businesses with new transportation innovations (Bosworth et al., 2020). Conversely, good quality connectivity can mean the possibility of expanding work from home (Bosworth et al., 2023). Through residential economy, the rural area gains impetus for traditional craft production (Ježek, 2020, pp. 8–9).

The most important problem for business in rural areas is the lower purchasing power of the local population compared to urban areas. Therefore, there is a lack of facilities and services in rural areas, a poor structure of economic activities and lower business activity. In terms of business conditions, the ‘threshold’ of a service is often looked at, i.e., how many people must be willing to demand the service within its catchment area in order for it to be economically viable. This makes it harder to do business in rural areas and many services cannot exist in rural areas at all (Ministerstvo zemědělství ČR, 2007).

3. Geographical characteristics of the study area

For our research on rural business, we chose peripheral areas at the borders of the Plzeň, Central Bohemian, South Bohemian and Ústí nad Labem Regions, namely municipalities in the districts of the following municipalities with extended competence (‘ORP districts’): Kralovice, Rokycany, Blovice, Nepomuk, Horažďovice, Sušice, Vimperk, Strakonice, Blatná, Příbram, Hořovice, Rakovník and Podbořany (Figure 1). We selected only two municipalities from the Beroun ORP district that border the Plzeň Region, because in most of the municipalities in this district, we assume a greater suburban influence of Prague. The size structure of the municipalities in the selected area is shown in Table 1.

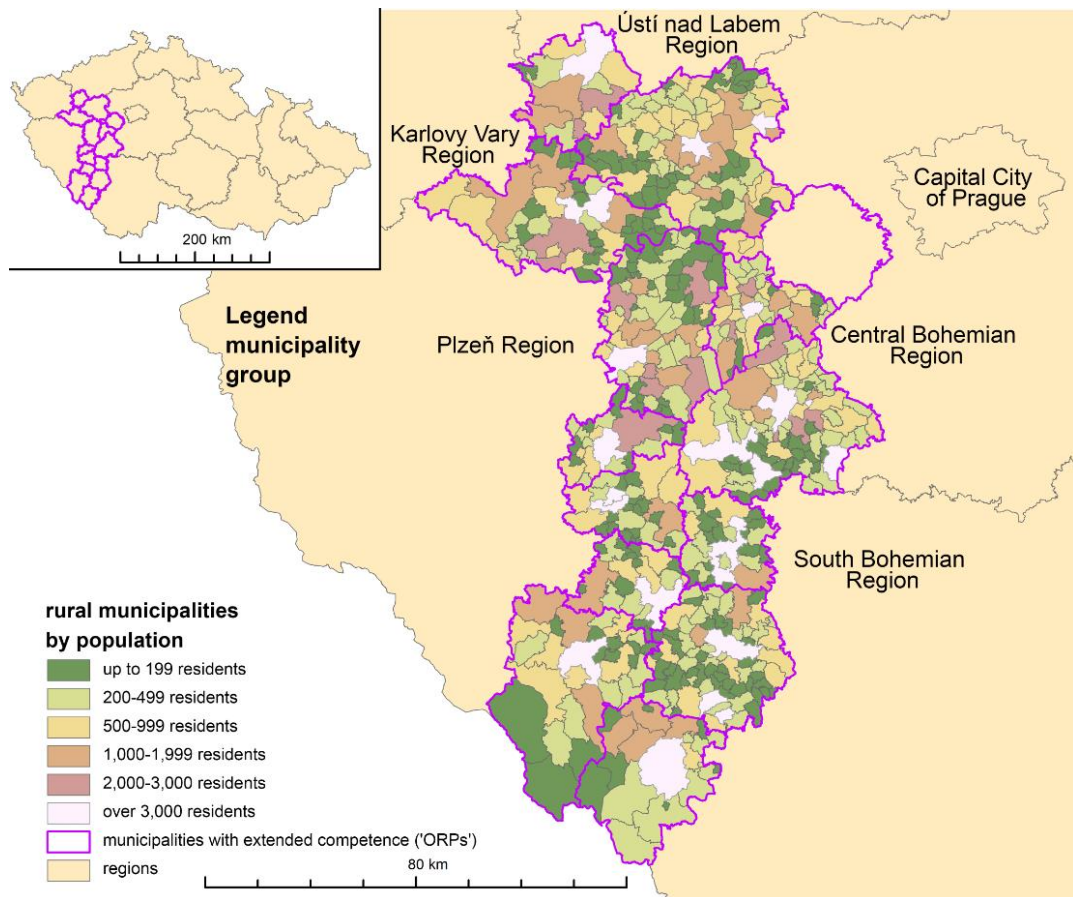


Fig 1. Definition of the study area. Source: ArcČR 500 geographical database (n.d.)

To be able to assess the business situation in the area, it is necessary to analyse the size structure of the municipalities, the possibilities of support for business, the demographic and educational structure of the population, and the conditions for economic activities in the area.

Tab 1. Size structure of municipalities in the study region (2022). Source: Czech Statistical Office, 2022b

Municipalities by population	Number of municipalities	Share of population
up to 199 residents	197	5.8
200-499 residents	179	14.8
500-999 residents	84	15.4
1000-1999 residents	40	14.4
2000-2999 residents	12	7.8
Over 3,000 residents	18	41.7
Total	530	100.0

From the geographical point of view, the study area is dominated by hills and uplands, 48.5% of the area is agricultural land, 40.7% is forest land and the share of arable land of total agricultural land is 68.5%.

There are a total of 530 municipalities in the assessed area, 58.3% of the population lives in 512 municipalities with up to 3,000 residents and 35.0% in municipalities with up to 1,000 residents. There are also 18 municipalities with more than 3,000 residents in the territory. The largest town is Příbram (31,000 residents), followed by Strakonice (22,000 residents). Three more towns have over 10 thousand residents: Rakovník, Rokycany and Sušice. 35.0% of the region's population lives in municipalities with a population of more than 5,000 residents. Rural municipalities usually have several parts that are

separated from each other and have a large territory (Czech Statistical Office, 2022a) in which they have to take care of local roads and other land. Municipalities with a population of more than 1,000 residents have the largest number of such subdivisions in the study area. The large fragmentation of settlements in the area has an impact on the quality of services and transport services and affects the conditions for business.

In terms of economic performance, small municipalities of up to 200 residents had the highest per capita incomes as well as the highest per capita expenditures in 2020, followed by municipalities with more than 1,999 residents. Lower incomes were then earned by municipalities of 500 to 2,000 residents (Czech Statistical Office, 2022a), which have a large fragmentation of settlements and the provision of infrastructure is more financially challenging for them. Inadequate coverage of financial needs for service and infrastructure provision negatively affects opportunities for business development (Woods, 2005).

The entire study area had a population of 374,616 as of 26 March 2021, which is 352 fewer than in 2011. The age structure of the population is slightly different from the age structure of the whole Czech Republic; the biggest difference is in the 65+ age group (seniors), as there are 2.3% more seniors living in the territory. On the other hand, people under 14 and people of working age (15–64) represent a smaller share than in the whole country (0.4% less and 1.3% less, respectively). Horažďovice, Nepomuk, Sušice and Blatná, i.e., areas at the regional borders of the Plzeň and South Bohemian Regions, have a higher proportion of seniors (Czech Statistical Office, 2022b). The age structure is also reflected in the ageing index, which was 155.8 in 2019 – i.e., significantly higher than in rural municipalities with up to 10,000 residents across the Czech Republic (Jeřábek et al., 2021). In terms of the differentiation of the population by education, the municipalities with more inhabitants have a higher proportion of inhabitants with higher education. While in the smallest municipalities with up to 199 residents, 47.5% of residents over 15 have finished secondary, higher vocational or higher education, in municipalities with 2,000–2,999 residents it is 52.7%, and in municipalities with over 2,999 residents it is 59.1% (Czech Statistical Office, 2022b). The education index reaches the same value (1.5) as found by Jeřábek et al. (2021) for rural areas. Both of the above facts reduce the potential of municipalities for entrepreneurship. Social services for the elderly could be developed.

When assessing the population in terms of economic activity, we have to rely only on data from 2011 (Czech Statistical Office, 2022b). In 2011, the share of economically active population (EAP) was already lower in the area than in the Czech Republic as a whole (50.6% in the area compared to 51.5% in the Czech Republic). The lowest share of EAP was in the Horažďovice, Blovice, Nepomuk and Sušice districts, while the higher share of EAP was in the Rokycany and Beroun districts. Unemployment was below the national average in the whole region as of 31 December 2021, with the exception of the district of Podbořany, where unemployment was higher (Czech Statistical Office, 2022b). There is higher unemployment among women than men in the area.

Tax revenues of municipalities are the basic and predominant source of finance for local budgets; the funds raised can be spent on the development of the municipalities and meeting the needs of citizens. Between 2014 and 2019, the per capita tax yield in the study area averaged CZK 5,654.2, which is higher than the average tax yield in all rural municipalities in the Czech Republic combined as according to Jeřábek et al. (2021). Such a promising development could also lead to a higher rate of completed housing. However, the intensity of housing construction is lower than the average for the entire rural area of the Czech Republic (2.6 dwellings compared to 3.2 dwellings per 1000 inhabitants (Jeřábek et al., 2021). The share of manufacturing in employment in the region's rural municipalities was more than 30% in 2017, except for the Kralovice, Rakovník a Blatná ORPs (Ženka & Pavlík, 2019). The economic development of rural communities is significantly limited by transport infrastructure. The road network in the study area is relatively dense, but it consists mainly of lower-order roads, with insufficient transport connections to the peripheral parts near the regional borders. This translates into lower levels of transport accessibility, labour mobility and influences employers' decisions to stay, especially in more remote areas. The average time accessibility by public transport is over 50 minutes to the regional capital and 15 minutes to the ORP (Jeřábek et al., 2021).

4. Methodology

For the assessment of business in rural areas, we used information at the administrative level of municipalities, which we divided into 6 categories (up to 199 residents, 200–499 residents, 500–1999 residents, 1,000–1,999 residents, 2,000–2,999 residents and over 3,000 residents). This is a division similar to the one used by the Czech Statistical Office in its statistics. Typical towns in the study area are Přebíram, Strakonice, Rakovník and Rokycany. Municipalities with 3,000 inhabitants or more, of which there are 14 in the territory, can be considered small towns. However, when evaluating the specific rural regions, these urban municipalities cannot be excluded from the study population because they have a significant impact on their rural surroundings. Therefore, we included them in the business evaluation.

For the evaluation itself of economic activities in the peripheral area, we used information from the Register of Economic Entities managed by the Czech Statistical Office (ČSÚ). Our article also uses data on economic entities for municipalities from the ČSÚ public database, obtained as of 10 September 2022. Data on economic entities are classified by legal form of the organisation, number of employees (OECD) and economic activities (CZ-NACE). The CZ-NACE level 2 classification is used. We are aware of the shortcomings of these data. Nevertheless, we believe that they provide an overview of the issue given that we are working with a large territory.

We also use the database of economic entities defunct in the period 2008–2021, which was provided by the Regional Administration of the ČSÚ in Plzeň, and the database of economic entities newly created between 2008 and 2020 from the same source. We use both databases to assess rural communities in terms of changes in economic activity.

The created database of municipalities with the number of economic entities, economic entities established and defunct, classified according to the legal form of the organizations, number of employees and economic activities (CZ-NACE) is then analysed using the prepared contingency tables, with the municipalities divided by size. In order to be able to compare the size categories of municipalities, we use standardization of values in the tables, converting them per 100 inhabitants, so that even very small municipalities, of which there are 197 (37%) in the region, are well characterized.

To test whether the population size of the municipality has a statistically significant effect on the number of economic entities per 100 residents, we use analysis of variance (ANOVA) processed by the STATISTICA software. To assess spatial differentiation, we use visualization cartographic methods, density maps and cartograms.

4.1 Evaluation of business activities

According to the database of the Register of Economic Entities, there were 93,547 economic entities (EEs) in the area as of 10 September 2022, i.e., 24.6 EEs per 100 residents, compared to 27.2 EEs in the Czech Republic as a whole. 60% of the EEs were registered in municipalities with up to 3,000 residents, and 40% of the EEs were registered in municipalities with more than 3,000 residents. There are 24.57 EEs per 100 residents in the study area, 25.31 EEs in rural municipalities (up to 3000 residents) and 23.53 EEs in municipalities with 3000 residents or more. In the Czech Republic as a whole, there are 28.58 EEs per 100 residents. Thus, the representation of economic entities is low in the study area, both in its urban and rural parts. This may be due to the short distance to Prague and Plzeň, where people can commute to work.

Since we evaluate municipalities according to their population size, we first need to check whether the differences between groups of municipalities are statistically significant. We used ANOVA (analysis of variance) for this evaluation. Since there are disproportionately fewer municipalities with larger populations, we combined municipalities with 500 or more inhabitants into one group for statistical processing. Table 2 shows that at the 0.05 significance level, there are statistically significant differences between groups of municipalities divided by population size. The evaluated dataset of municipalities with the number of economic entities is shown in the chart in Figure 2.

Tab 2. Statistical significance of the influence of the municipality's population on the number of economic entities per 100 residents. Source: processed by the authors in Statistica

Effect	Univariate Test of Significance for economic entities per 100 residents Sigma-restricted parametrization Effective hypothesis decomposition				
	SS	Degr. of Freedom	MS	F	p
Intercept	412561.9	1	412561.9	9506.899	0.00
Size group	8623.3	2	4311.7	99.356	0.00
Error	22869.7	527	43.4		

Cell No.	Scheffe test; variable economic entities per 100 residents Probabilities for Post Hoc Tests Error: Between MS = 43.396, df = 527.00				
	Size group	{1}	{2}	{3}	
1.	up to 199 residents	33.459	0.000000	0.000000	
2.	200 – 499 residents	0.00	26.758	0.000499	
3.	500+ residents	0.00	0.000499	23.914	

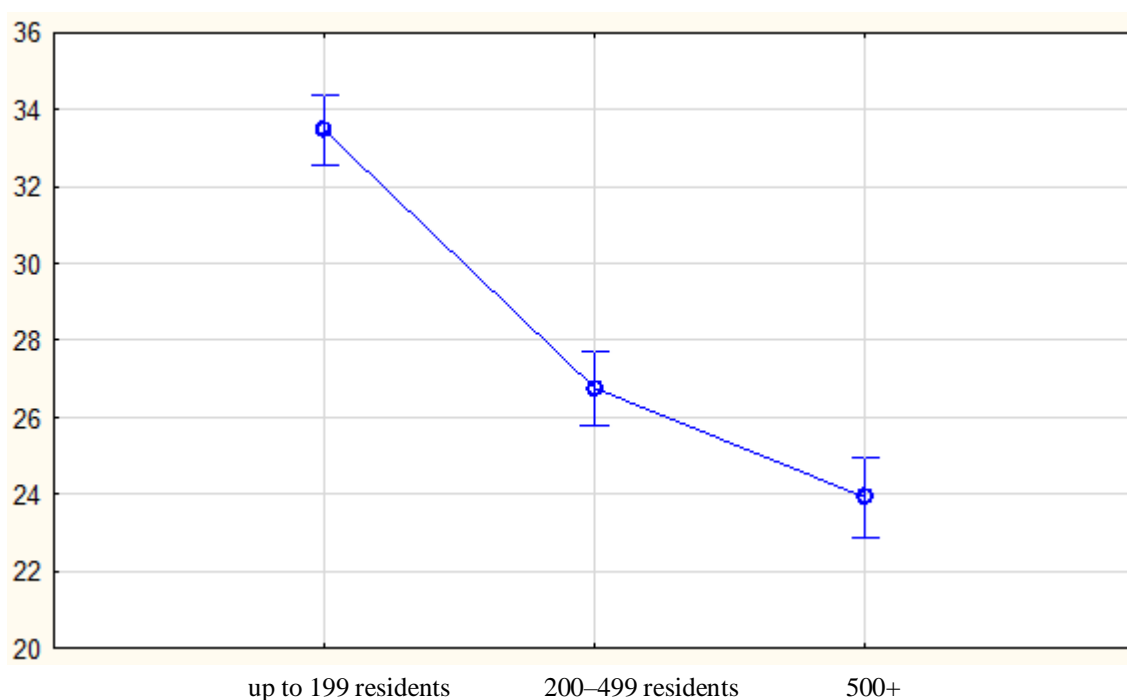


Fig 2. Evaluated dataset of municipalities with numbers of economic entities. Size group LS Means, Current effect $F(2,527) = 99.356$, $p = 0.0000$, Effective hypothesis decomposition. Vertical bars denote 0.95 confidence intervals. Source: processed by the authors in Statistica

There are 8,156 EEs-legal entities in the area, most of which are companies (Czech Statistical Office, 2022b). The highest number of companies per 100 residents is found in small municipalities with less than 200 residents (2.3 companies per 100 residents) and in municipalities with more than 3,000 residents (2.4 companies per 100 residents). In small municipalities, these are mostly companies transformed from the former united agricultural cooperatives. In the larger settlements, these are most often companies in the manufacturing industry.

In proportion to the number of residents, the number of private entrepreneurs-natural persons (PEs) is also highest in small municipalities with up to 199 residents (19.5 PEs per 100 residents), while it is 18.7 PEs per 100 residents in municipalities with 200–499 residents and around 18 PEs per 100 residents

in other municipalities. A more significant difference between the groups of municipalities can be seen in the case of agricultural entrepreneurs (Czech Statistical Office, 2022b).

However, apart from agricultural entrepreneurs, there is not much difference in the intensity of entrepreneurship between groups of municipalities divided by population.

When assessing EEs by the number of employees, most EEs have no employees or 1 to 5 employees (Czech Statistical Office, 2022b). The number of entities with more employees increases only slightly with the size of municipalities. It can be said that small and medium-sized economic entities predominate in the area. A tenth of the more populous rural municipalities have economic entities that employ 250 or more people.

To evaluate the geographical aspect, we prepared a map of the density of EEs per km² (Fig. 3), where the influence of transport accessibility to large transport centres is visible (influence of the motorway Prague–Pilsen).

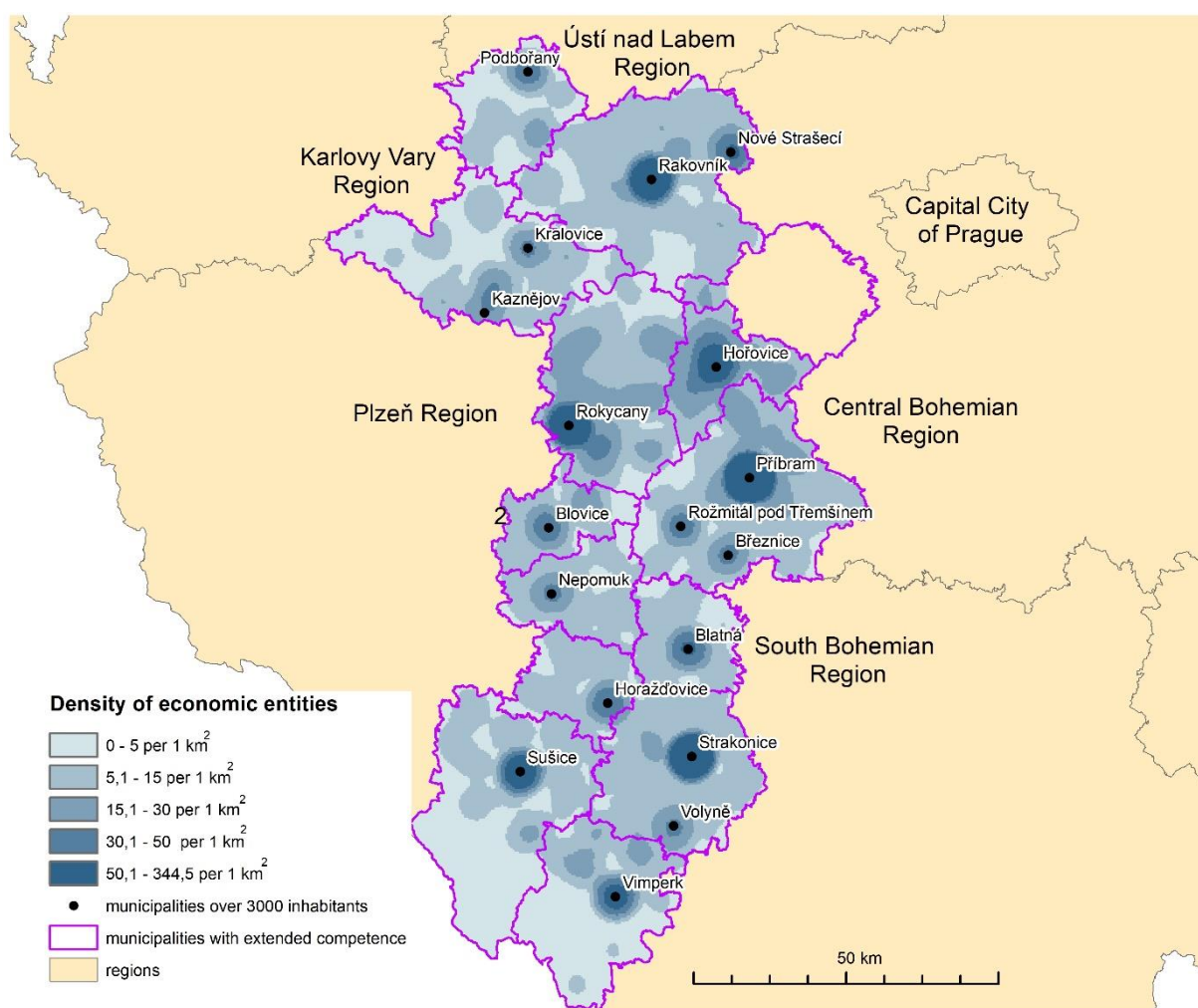


Fig 3. Density of economic entities in 2022. Source: ArcČR 500 geographical database (n.d.), processed by the authors according to the ČSÚ

In terms of the NACE sectoral focus of the EE, trade (except motor vehicles) and construction are the most represented sectors in the whole area, with 15.5% and 15.4% respectively. In urban municipalities, there is a higher share of economic entities focused on trade (18.3%), whereas in rural municipalities, more EEs are focused on construction (15.7%). This is followed by agriculture-related industries – farming of agricultural land and breeding of livestock, accounting for 10.1% of the EEs in rural municipalities. Their impact on the employment of residents and on the rural community as a whole is greater, as they often include at least one medium-sized entity. Around 5% of the EEs operate in the food and beverage service sector, and the same share in other personal service activities. Food and beverage service activities are

more common in rural municipalities (5.2%), while other personal service activities are more present in more populous municipalities. The regional differentiation of economic activities in agriculture is shown in the cartogram (Fig. 4). In our view, the higher representation of EEs in agriculture in significantly rural areas, together with the expansion of organic land management, represents a great potential for this area.

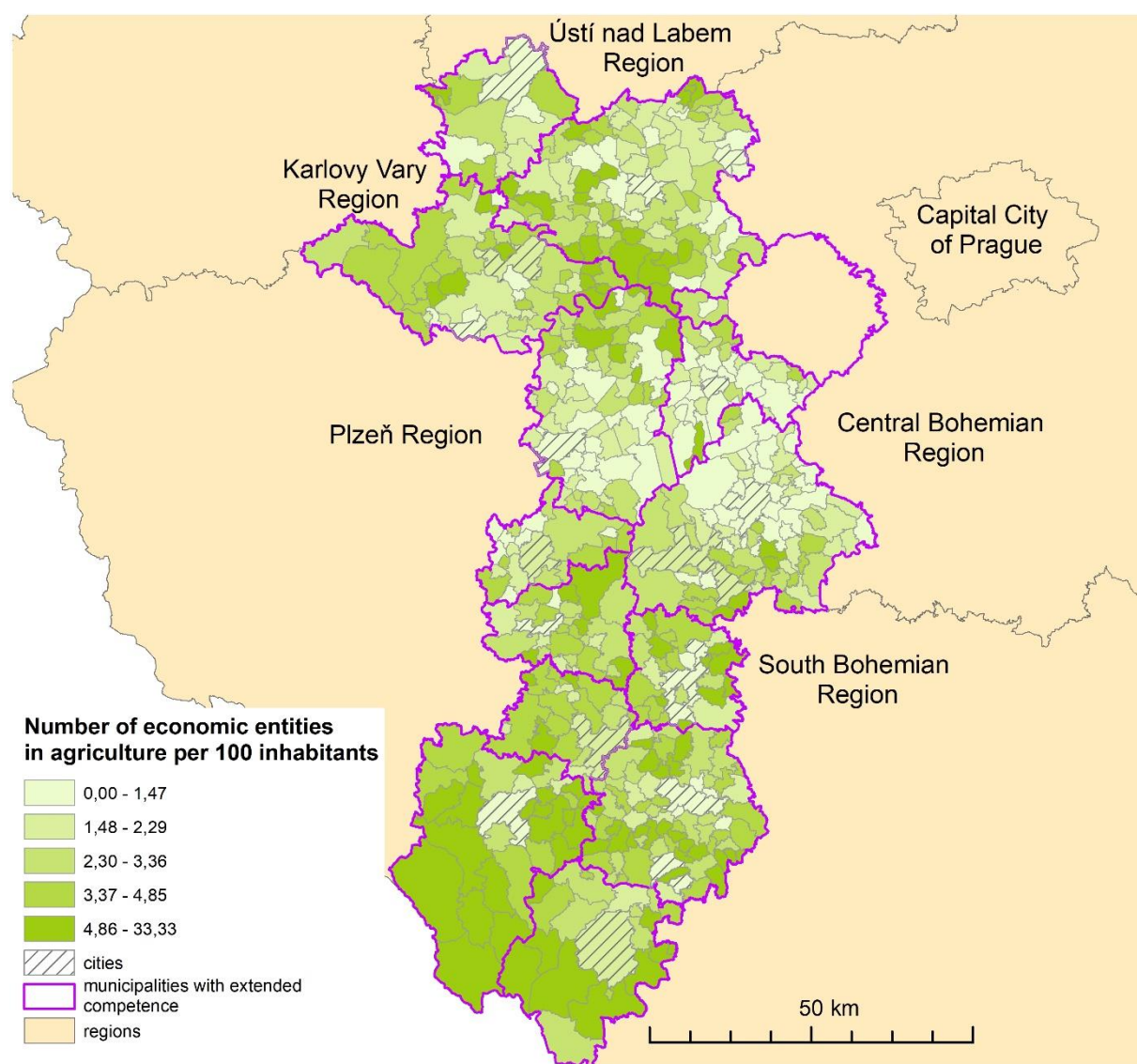


Fig 4. EEs in agriculture per 100 residents in municipalities in 2022. Source: ArcČR 500 geographical database (n.d.), processed by the authors according to the ČSÚ

A total of 4.5% of the EEs are focused on research and development, advertising and market research and other professional, scientific and technical activities, i.e., higher value-added sectors, the share being 3.9% in rural municipalities. A relatively high share of economic entities in the region (4.3%) is also accounted for by entities focused on rental and leasing activities and employment activities², as well as (in the Brdy region where the production of basic metals used to be predominant) on manufacture of metals, casting of metals and manufacture of metal structures (3.7% of the EEs in total and 3.9% of the EEs in rural municipalities). The continuing tradition of industrial and construction business in the central part of the study area (eastern part of the Kralovice district, the Příbram, Horažďovice, Nepomuk districts) is shown in Figure 5.

² This division includes activities of listing employment vacancies and referring or placing applicants for employment, where the individuals referred or placed are not employees of the employment agencies, supplying workers to clients' businesses for limited periods of time to supplement the working force of the client, and the activities of providing other human resources.

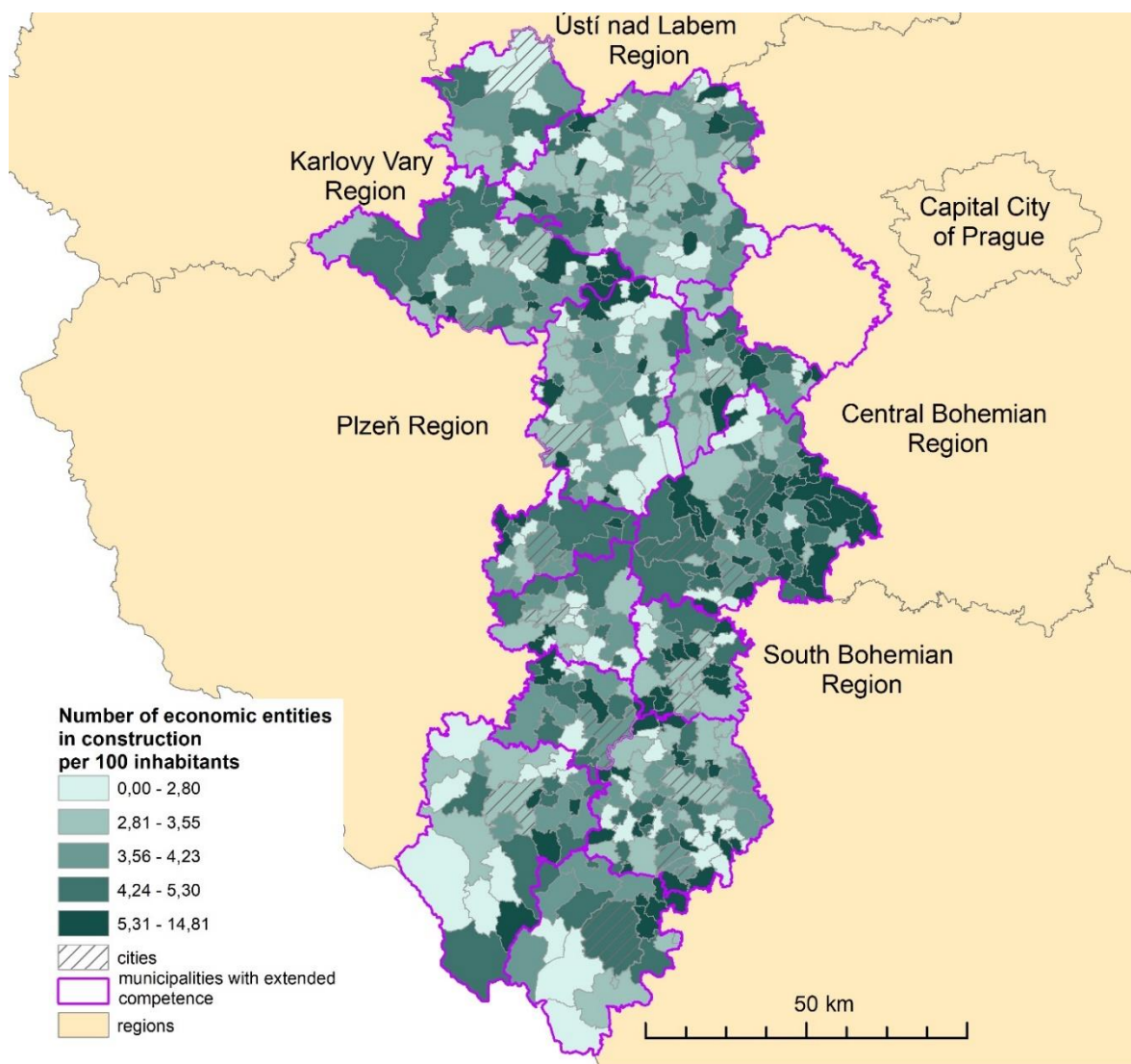


Fig 5. EEs in the construction sector per 100 residents in municipalities in 2022. Source: ArcČR 500 geographical database (n.d.), processed by the authors according to the ČSÚ

For the peripheral rural areas, we assumed a higher representation of industries focused on manufacture of wood and of products of wood; however, only 1.6% of the EEs in the area and only 2% of the EEs in rural municipalities focus on these activities. There is also very little representation of social care services (0.2%), although there is a higher proportion of seniors in the area. We see further business opportunities in this direction.

In order to capture the stability of rural business, we also focused on economic entities that have ceased operations. Between 2008 and 2021, this totalled 32,843 entities, representing 35.1% of the entities existing in 2021. There were 8.6 defunct EEs per 100 residents, and 9.7 EEs in the Czech Republic as a whole.

Before evaluating the municipalities according to their population size, it is again necessary to first check whether the differences in the number of defunct EEs per 100 residents between the groups of municipalities are statistically significant. The results of the analysis of variance in Table 3 show that at the 0.05 level of significance, there is a statistically significant difference between the group of the least populated municipalities and the other groups. There is no difference between the groups of municipalities larger in population in terms of the number of defunct EEs per 100 residents. The evaluated dataset of municipalities with numbers of EEs is shown in the chart in Figure 6.

Tab 3. Statistical significance of the effect of the municipality's population on the number of defunct economic entities per 100 residents. Source: processed by the authors in Statistica

Effect	Univariate Test of Significance for defunct EEs per 100 residents				
	Sigma-restricted parametrization				
	Effective hypothesis decomposition				
	SS	Degr. of Freedom	MS	F	p
Intercept	37110.21	1	37110.21	2569.114	0.000000
Size group	261.46	2	113.73	9.050	0.000137
Error	22869.7	527	43.4		

Cell No.	Scheffe test; variable defunct EEs per 100 residents				
	Probabilities for Post Hoc Tests				
	Error: Between MS = 14.445, df = 527.00				
	Size group	{1}	{2}	{3}	
1.	up to 199 residents		0.002792	0.000831	
2.	200–499 residents	0.002792		0.895109	
3.	500+ residents	0.000831	0.895109		

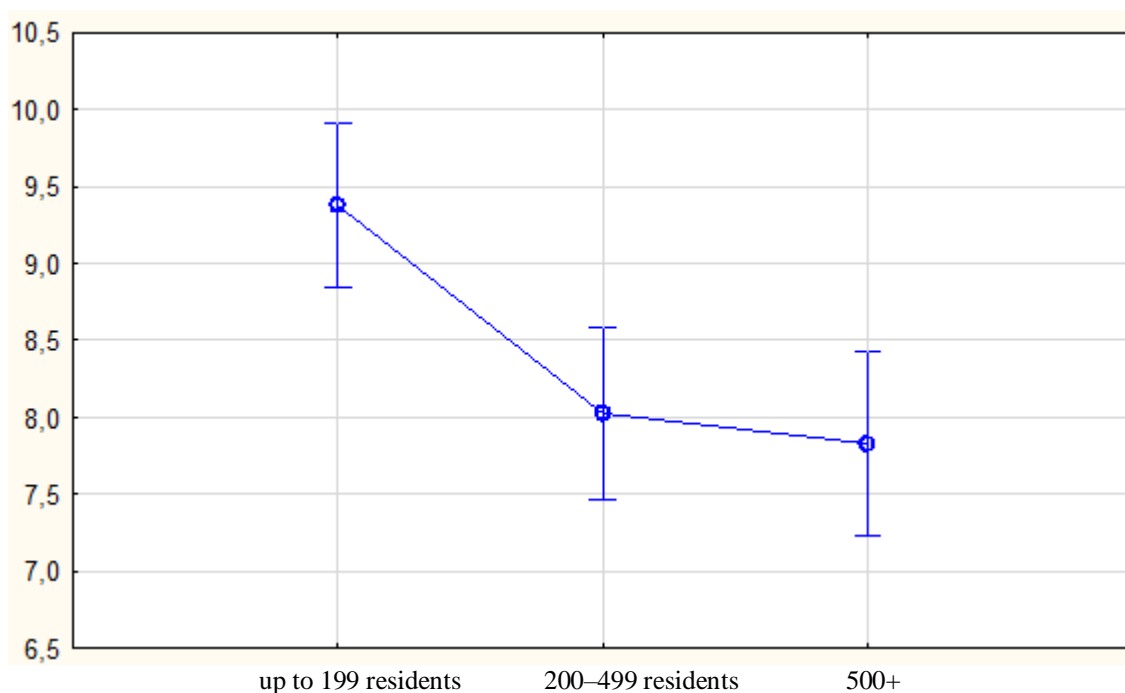


Fig 6. Evaluated dataset of municipalities with the number of defunct EEs, 2008–2021. Size group LS Means, Current effect $F(2.527) = 9.0502$, $p = 0.00014$, Effective hypothesis decomposition. Vertical bars denote 0.95 confidence intervals. Source: processed by the authors in Statistica

In sparsely populated municipalities, most economic entities disappeared in 2009, when the economic crisis in the Czech Republic peaked, and then in 2013 and 2019. More populated municipalities experienced a more significant disappearance of economic entities in 2013 and 2019. Thus, it seems that crises threaten business more quickly in the smallest municipalities. A greater difference than by population size of municipalities is seen regionally. A larger number of EEs defunct in the period 2008–2021 was recorded in the Podbořany ORP, in the peripheral parts of the Rakovník ORP, in the Příbram ORP, in the Strakonice ORP and in the southern part of the Sušice and Vimperk ORPs (Fig. 8), mostly in places with worse transport accessibility.

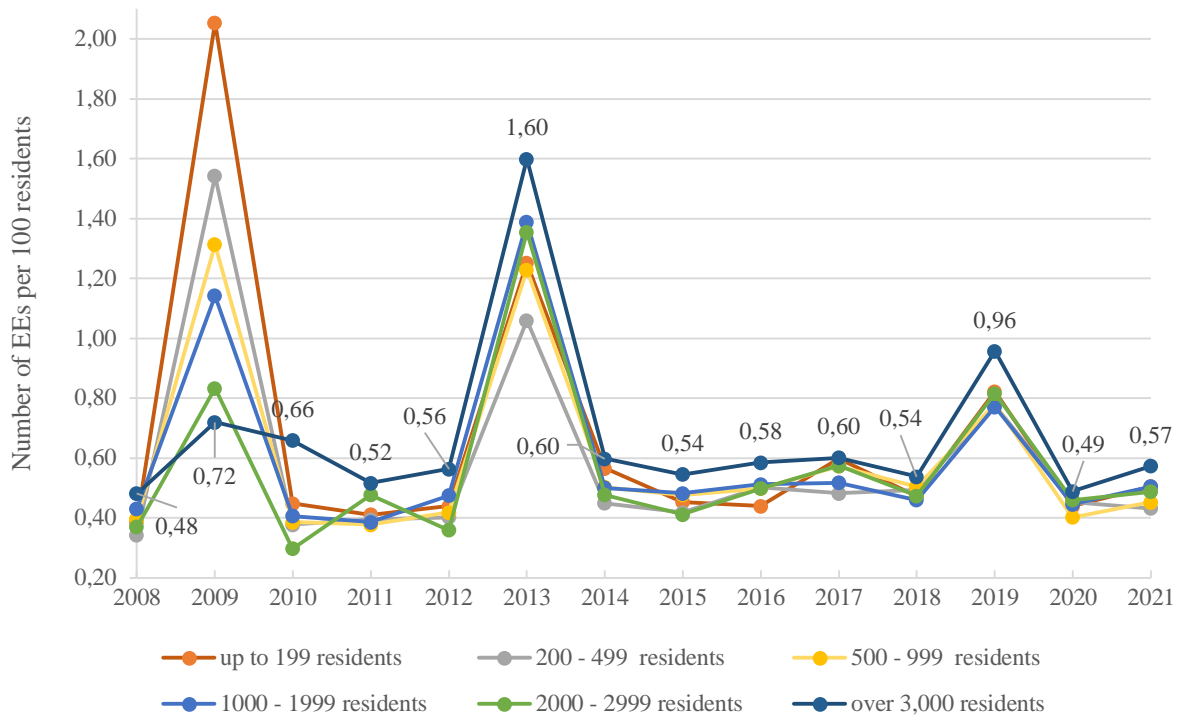


Fig 7. Number of defunct economic entities per 100 residents in municipalities by size, 2008–2021. Source: Database of the Czech Statistical Office on defunct economic entities, 2022

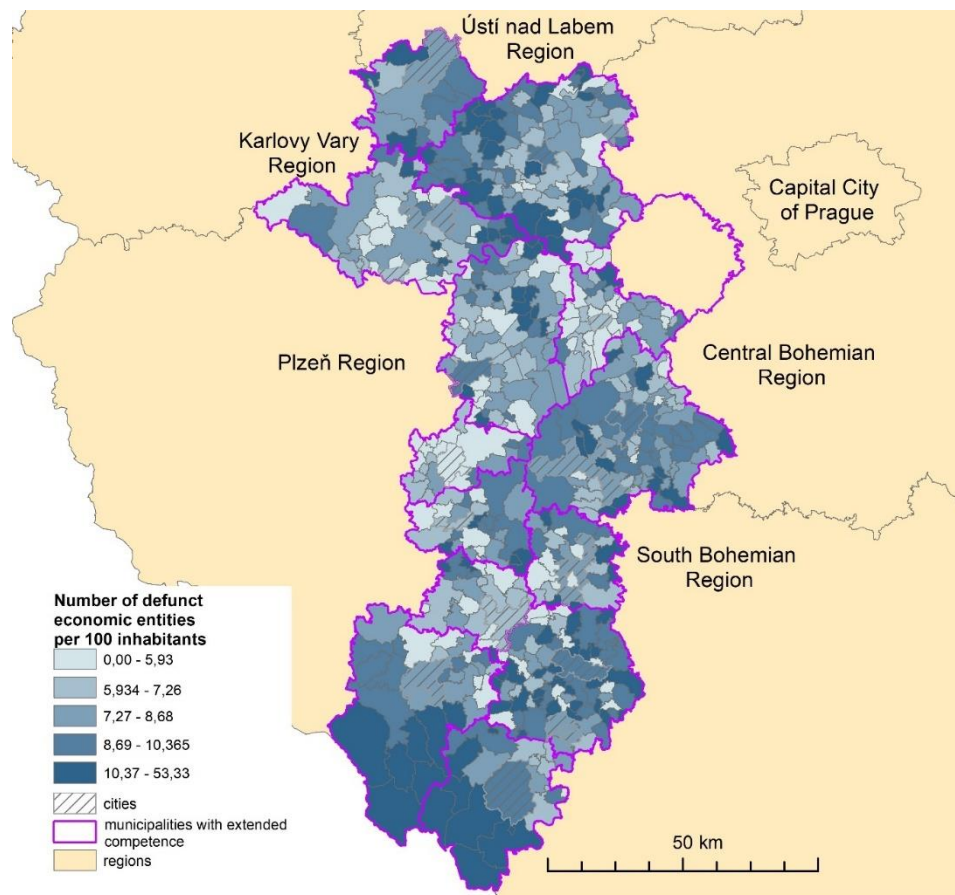


Fig 8. Defunct EEs per 100 residents in municipalities, 2008–2021. Source: ArcČR 500 geographical database (n.d.), processed by the authors according to the ČSÚ

In terms of business activity by industry, the largest decline in the number of economic entities related to financial service activities, insurance and other financial activities, and the number of entities defunct in the last 14 years is higher than the current number of the active ones. A relatively large number of EEs also disappeared in forestry, agriculture, manufacture of wood and commercial activities.

In the period 2008–2020, 32,336 economic entities were created in the area, i.e., 8.5 EEs per 100 residents (12.9 EEs in the Czech Republic as a whole). Before evaluating the municipalities according to their population size, it is again necessary to first check whether the differences in the number of EEs created per 100 residents between groups of municipalities are statistically significant. The results of the analysis of variance in Table 4 show that at the 0.05 level of significance, there is again a statistically significant difference between the group of the least populated municipalities and the other groups. In the municipalities with more than 200 residents, the differences in the number of EEs created are not statistically significant. The evaluated dataset of municipalities with the number of EEs created is shown in the chart in Figure 9.

Tab 4. Statistical significance of the influence of the municipality's population on the number of new EEs per 100 residents. Source: processed by the authors in Statistica

Effect	Univariate Test of Significance for new EEs per 100 residents Sigma-restricted parametrization Effective hypothesis decomposition				
	SS	Degr. of Freedom	MS	F	p
Intercept	41167.88	1	41167.88	4563.955	0.000000
Size group	115.70	2	57.85	6.413	0.001771
Error	22869.7	527	9.02		

Cell No.	Scheffe test; variable new EEs per 100 residents Probabilities for Post Hoc Tests Error: Between MS = 9.0202, df = 527.00				
	Size group	{1}	{2}	{3}	
1.	up to 199 residents	9.5030	0.014290	0.006817	
2.	200–499 residents	0.014290	8.5953	0.938530	
3.	500+ residents	0.006817	0.938530	8.4777	

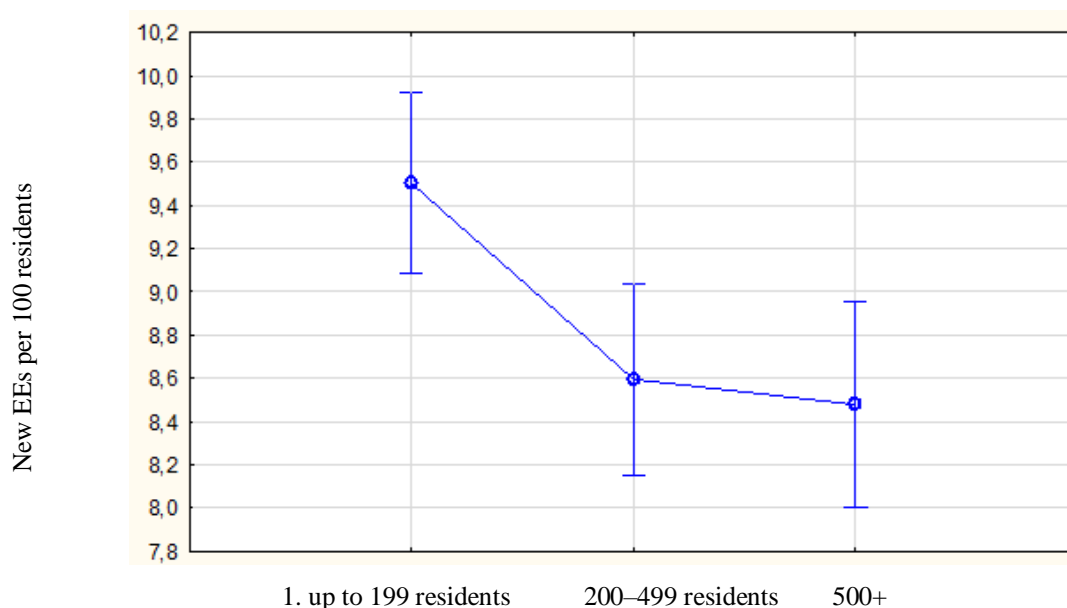


Fig 9. Evaluated dataset of municipalities with the number of new EEs, 2008–2020. Size group LS Means, Current effect $F(2.527)=6.4132$, $p=0.00177$, Effective hypothesis decomposition. Vertical bars denote 0.95 confidence intervals. Source: processed by the authors in Statistica. The development of new EEs was similar in all size groups in the period 2008–2020, except for the smallest municipalities with up to 199 inhabitants (Fig. 10), which show more significant changes

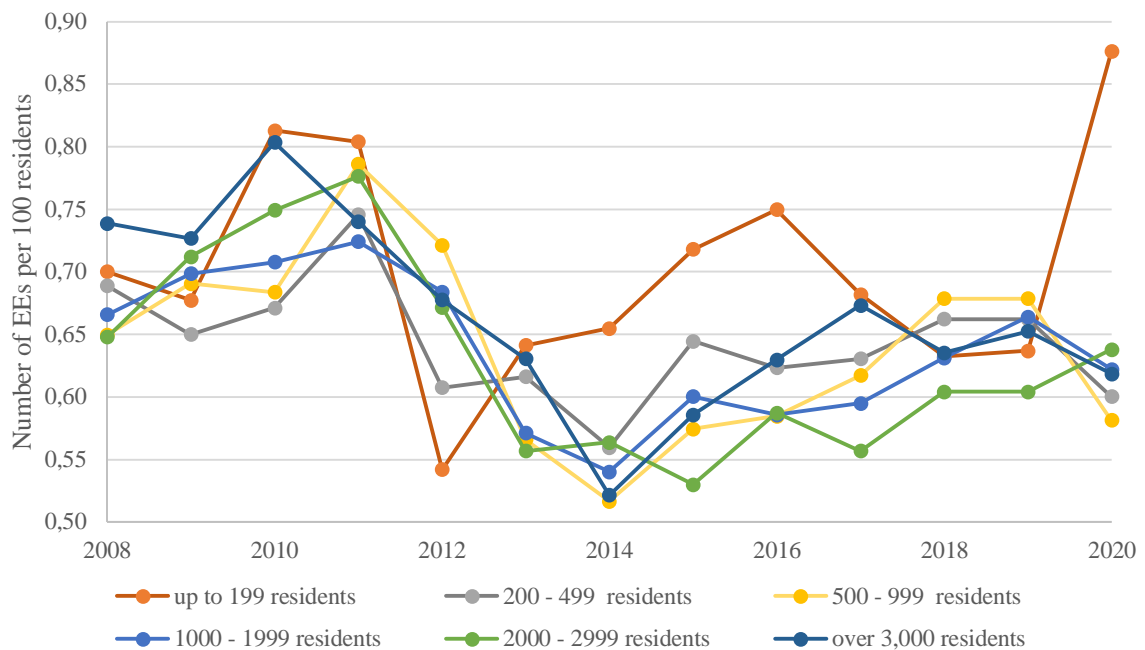


Fig 10. Number of new economic entities per 100 residents in municipalities by size in 2008–2020. Source: Czech Statistical Office, 2022b

In terms of spatial distribution, there is no significant difference in the number of newly established economic entities per 100 residents between the individual ORPs, while important differences can be seen within the ORPs (Fig. 11). From a regional perspective, the largest number of new EEs was created in the Přebíř and Vimperk ORPs, the lowest number Podbořany and Blatná ORPs. The difference between the ORPs is a maximum of 2 EEs per 100 residents. If we compare the newly established and defunct economic entities, then overall the number of EEs in the Podbořany, Rakovník, Nepomuk, Strakonice and Vimperk ORPs is slightly decreasing, while the number of EEs in the Blatná, Horažďovice, Kralovice, Přebíř, Rokycany and Sušice ORPs is slightly increasing. A larger increase in the number of EEs occurred in the Blovice, Hořovice and Beroun ORPs, especially in areas with good transport accessibility.

According to the NACE classification, the largest number of economic entities in the region was created in the trade and construction sectors, with an average of 1.29 and 1.16 EEs per 100 residents respectively. There was also a significant increase in the number of EEs in research and development, other personal service activities, food and beverage services, and real estate activities. This development may be influenced by the increasing educational level of the population and the increased interest in recreational use of the area. On the other hand, the number of economic entities that can use local resources has decreased (i.e., entities focusing on agriculture, forestry and manufacture of wood). We do not consider this trend to be a good one, as agricultural land and forests account for 88% of the area and thus represent a large natural potential for the local economy.

If we look at the creation of new economic entities according to the population size of the municipalities, in the smallest municipalities, EEs focused on construction, trade, research and development, and food and beverage services have been established, but, on the other hand, EEs focused on the use of local resources, i.e., agricultural, forestry or wood processing entities, are declining. An above-average number of new EEs are also focused on other personal service activities. In the larger rural municipalities, the largest number of new EEs were created in construction, trade, research and development, and food and beverage services. Conversely, fewer new entities are focused on traditional agricultural processing and food production, forestry, wood processing or furniture manufacturing. For the period under study (since 2008), we have not confirmed the finding of Ženka et al. (2021) on the growth of manufacturing in rural communities, as our paper, unlike that of Ženka et al. (2021), focuses only on peripheral rural areas, and does not cover the whole Czech Republic, but only a selected part in Western Bohemia. Therefore, different results cannot be considered comparable.

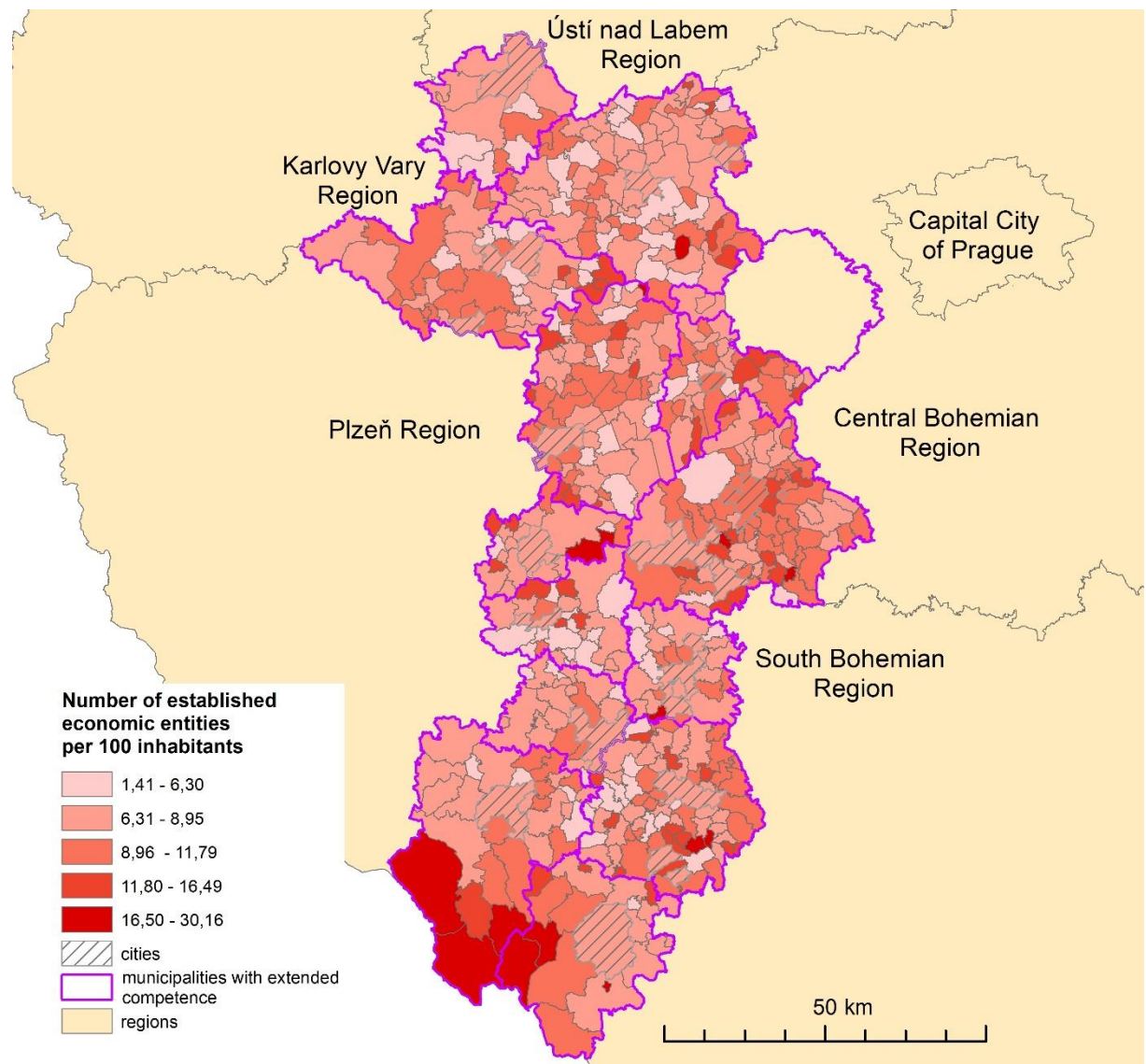


Fig 11. New EEs per 100 residents in municipalities in 2008–2020. Source: ArcČR 500 geographical database (n.d.), processed by the authors according to the ČSÚ

5. Discussion and conclusion

The results of this study are supported by statistical data. The Czech Statistical Office provides data on the structure of economic entities according to NACE, and based on these data, it is possible to analyse the business structure and find connections between the size of the business, location or size of the settlement (Perlín, 2022). Unfortunately, the Czech Statistical Office does not provide sufficiently reliable data, although the demand for economic data for municipalities from academics still exists (Ženka, 2022). The relevance of these data is limited not only by the up-to-dateness of the data (Czech Statistical Office, 2022a, Czech Statistical Office, 2022b), but also by other phenomena, such as a mismatch between the place of business of a given legal entity and its registered office or false self-employment, where some of the economic entities in the Register of Economic Entities may actually be employees working under a trade license. One must also not forget about the grey economy, i.e., people in the study area who are doing business without any registration or paying taxes. The above facts cannot be addressed in a relevant way in describing the local economic reality. Also for this reason, we focus more on change detection. It would be advisable to check how the reality differs from the data in the Register of Economic Entities by detailed research of several municipalities.

Our aim was to give an overview of economic activities in peripheral rural areas of the Czech Republic, the changes that have recently taken place in their economic sphere and to assess the impact of those

changes. Our analyses show that the countryside is changing, and that typical urban economic activities are increasing, following the pattern of urban localities. Over the last 14 years, a significant number of economic entities focused on research and development have been established in the study area, and their percentage share in the area has thus increased considerably. On the contrary, the “typical” rural economic orientations around agricultural production have been decreasing in importance in the study area.

At the same time, other adverse trends in the number of certain economic entities are occurring with greater intensity in the rural areas surveyed. In particular, there is a decline in some traditional crafts that process local raw materials (such as wood). These industries could provide job creation and diversify the production structure based on endogenous resources.

From a contextual point of view, we found that entrepreneurship in rural municipalities in the study area is mainly complicated by factors related to transport services. These include a set of problems including a large fragmentation of settlements and the associated rising costs of transport for businesses, maintenance of roads and the need to build new ones for municipalities. Municipalities do not have sufficient resources to cover all the expenditures that would be necessary in terms of municipal development. This leads to entrepreneurs leaving (either to a better environment or out of the market altogether). The absence of sufficient resources for rural municipalities to cover all necessary expenses has an understandably negative knock-on effect on the possibility of developing or maintaining rural businesses. Demographically, the size of the local population is stagnating as the population ages, and the number of economically active people is decreasing (Jeřábek et al. 2021). These two facts reduce the general potential for new business in the long run. There are also problems with existing entrepreneurs. All this will contribute to the declining profitability of rural business. In the future, it can be expected that more businesses and entrepreneurs will gradually leave the countryside.

Rural municipalities in the study area are still relatively well off in terms of tax budgeting, as their tax revenue from the state is above the national average (Czech Statistical Office, 2022a). In terms of the existence of potential municipal funds, the creation of a business offer or maintaining it in the market for customers from the municipality can be stimulated. In theory, there are better financial conditions for finding potentially available funding by municipalities to support entrepreneurship.

Analysis of economic activities in the surveyed part of the Czech countryside shows that although there are on average slightly more economic entities in small towns than in smaller municipalities, their number significantly lags behind the national average number of economic entities per 100 residents, and thus the surveyed area can be described as an area with (relatively) low entrepreneurial activity. More people than average are employed by relatively fewer economic entities, leading to less competition on the supply side. This has a negative impact on wage increases and the quality of services provided. In the rural area surveyed, the dominant economic entities are clearly entrepreneurs-natural persons, who represent more than 90% of the total number. Almost evenly across the size categories of municipalities, there are about 18 self-employed persons per 100 residents. This means that the population size of a community is not crucial for the presence of self-employed entrepreneurs. Only for municipalities with up to 200 residents, the number is slightly higher due to the higher number of agricultural entrepreneurs. Their relative number, unlike that of other natural persons doing business under the Trade Act, has a significant downward trend with increasing size of the settlement. This implies that the population size of the community is a relevant factor for the presence of agricultural entrepreneurs in the study area. The number of legal persons per 100 residents tends to decrease with increasing municipal size up to the level of ‘townships’. At this level, however, the situation changes and the number per 100 persons increases, which means that legal persons tend to concentrate in towns. The relatively higher number of legal persons in the smallest municipalities is due, in addition to the small population, to the presence of agricultural cooperatives based there.

In the study area, larger employers are concentrated in ‘small towns’, to a lesser extent in ‘townships’, and only in a few cases operate in villages. In terms of the sectoral focus of economic entities, the most

represented sectors across the area are trade (excluding motor vehicles) and construction³ (together almost ⅓ of all economic entities), while the wood processing and social care sectors lagged far behind expectations.

In the study area, the representation of the above-mentioned fields is the following: economic entities related to agricultural production: over 10% (in rural municipalities with less than 2,000 residents; otherwise less); economic entities operating in the food and beverage services sector (across categories): around 5%. Importantly (for the market power of the customers, the budgetary determination of taxes and the competitiveness of the defined territory), the economic entities operating in high value-added sectors represent in aggregate almost 8.5% of all economic entities in the territory. This could be the reason why the local municipalities receive above average budgetary allocation of taxes compared to other regions.

Furthermore, it is possible to assess the stability of economic entities in rural areas through the number of disappearances of economic entities in the area. Termination of companies in the study area is associated with the first impact of economic crises (2009, 2013 and 2019). In the above-mentioned crisis years, the termination of economic entities in rural villages was more frequent than in small towns. By contrast, in other years, the average annual termination of economic entities in villages was lower than in small towns.

However, a geographical inequality between these terminations is also clearly visible in the study area. In the Podbořany ORP, there were on average six defunct economic entities per rural municipality per year in the period 2008–2021, while in the Blatná or Strakonice ORPs, there were less than two. From a sectoral point of view, terminations of financial economic entities were the most frequent. This is probably linked to the financial nature of economic crises.

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³ False self-employment may also play a role here.

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