

SMALL BUSINESS SUSTAINABILITY AND REGIONAL DEVELOPMENT: LESSONS LEARNT FROM SECTORAL CHANGES IN CHINA AND THE CZECH REPUBLIC

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ABSTRACT

Changes in regional policy could affect the development and sustainability of small businesses, which react to external conditions. The main goal of this paper is to propose a regional system of indicators of an assessment of the business environment. The proposed system of indicators reflects the specifics of regions that have undergone sectoral change. The structure of the paper follows a top-down approach, first describing the national and then the regional context of the chosen, somewhat similar, regions within the selected countries. The paper first describes current analytical results from an overall national evaluation of two different countries (Czechia and China) with selected structurally changed regions. Lastly, it proposes a system of indicators. The systematic part of the paper contains a practical case study from one Czech region to illustrate the examined problems and how to connect business needs with regional policy issues. According to the findings, when an entrepreneur is in daily contact with the local government, the quality of the business environment is very important for each of them to exploit a comparative advantage from the market. Proposals are based on a field survey study of 215 entrepreneurs, conducted in the selected Moravian-Silesian region that has undergone sectoral change similar to Shanxi Province today. The results could be applicable as an example of good practice by means of which to evaluate other regions in the same situation.

KEY WORDS

Small business, region, sustainability, indicators, sectoral change, KOF, Moravian-Silesian region, Czechia, China, Shanxi region.

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Introduction

In recent decades, increased interest in examining the relationship between entrepreneurship in society and local government and public and private organisations could be observed. Policymakers place great emphasis on supporting the outcomes of entrepreneurship, because this

generates economic development in the examined area (Pichler, 2018; Gancarczyk, 2019). The concept of regional values, as well as attitudes towards entrepreneurship, exert a strong influence on the rate and level of entrepreneurial activity in a country's regions. In other words, these factors can

influence the levels of social acceptance and encouragement of entrepreneurs and their activities in a region in a general sense (Beugelsdijk, 2007; Westlund and Bolton, 2003). The social acceptance of entrepreneurship in a region may influence entrepreneurial activity directly as well as indirectly, through long-term influence on 'playing the game' (High, 2009) in a region where the regional government sets the 'formal rules of the game' (Andersson, 2012). In recent years, especially after the financial crisis and before the start of the new programming period of EU structural policy known as Horizon 2020+, there has been increased interest from researchers in examining the relationship between entrepreneurship and societal development. Policymakers are shifting their emphasis to local government, as well as to public and private organisations, in their efforts to support entrepreneurship in less developed regions or regions with economic disparities. Nevertheless, relatively little is known about the influence of entrepreneurship on regional economic performance (Wennekers and Thurik, 1999; Braunerhjelm, 2008; Toma et al., 2014).

Earlier empirical studies took a much broader view of entrepreneurship in its national and regional contexts (Lundström and Stevenson, 2005, 2008; Zahra and Wright, 2011; Wennekers and van Stel, 2017; Dvouletý, 2017). The results of those studies had an important impact as they served to reduce the level of uncertainty among entrepreneurs. Unfortunately, many studies examined start-up entrepreneurs and their behaviour, but did not follow businesses as they transitioned through their successive lifecycle stages, nor did they address behavioural changes (Freytag and Thurik, 2006; Petty and Bonardi, 2006).

This paper is organised as follows. The first section presents the research subject.

In this paper, we began with a national evaluation of two countries (Czechia and China) and have narrowed our focus to regions in these countries (the Moravian-Silesian Region as the source for the case study and Shanxi Province as an end user of the results) that have experienced sectoral change. The emphasis is on the Moravian-Silesian Region in Czechia, which has historically been characterised by huge sectoral change in heavy industry and coal mining. We propose a system of indicators for the business environment that would be useful for the evaluation of the effectiveness of regional policies in the area of business support, especially for regions that have undergone structural change. We have based our proposal on primary research using Kapstein and Kim's (2011) indicators and have extended this approach based on our own findings from primary research in both regions. These indicators express the capacity of different regions to be dynamic at both the local and regional levels. The second section introduces the overall national evaluation of two countries based on divergence evaluation with two regions that have undergone structural change, defined as a shift in economic development of the region from heavy industry to technology, IT and innovative society, initiated by changes in policy decisions (Laitner, 2000). The third section presents our primary research in one region as a case study and a proposal for a system of indicators. In the concluding section, we comment on our research results.

1. Literature review

The relationship between an entrepreneur, their economic activity and regional influence is based on the work of Hébert and Link (1988), who, proceeding from their knowledge of economic theories, characterised 12 types of entrepreneurs depending on their personality, their influence on

enterprise development, their work and the ability of the entrepreneur to find alternative resources in regional conditions. In later publications, devoted primarily to the behaviour of entrepreneurs, entrepreneurship is conceived as a process with four main areas emphasised: (i) the entrepreneur as a part of the economic system and his own enterprise, (ii) the entrepreneur as part of economic activity, (iii) the entrepreneur's activities as a resource, resulting from the primary entrepreneurial motives, and finally (iv) the dynamics of the entrepreneur's behaviour in the market (van Praag, 2005; Thurik and van Dijk, 1998).

1.1. Entrepreneurship and its sustainability related to the regional business environment

The above mentioned attributes arising from an entrepreneurial environment can be found even at the beginning of economic literature focusing on entrepreneurship issues. Due to imperfect information and market anomalies, it is increasingly difficult for an enterprise to look for new opportunities and thus be ready to make use of them (Kirzner, 1997). The main variables influencing the quality and speed of dynamic decision-making are the age and size of the enterprise (Cunningham and Lischeron, 1991; Harrison, 1994).

Subsequently, the entrepreneurial process is mostly determined by the entrepreneur himself (Nijkamp, 2003) in the following way: (i) personal motivation, arising from the desire for success; nevertheless, this alone cannot guarantee a successful business, unless targets have been set clearly and the strategy implemented well (McClelland, 1967), which encompasses risk bearing and checks of the activities carried out; (ii) the social environment, that may support the career of an entrepreneur, or conversely greatly hinder it. In this aspect, one may also factor in find-

ing new business opportunities, including suitable resources (Shapero, 1984); (iii) the external entrepreneurial environment, influenced particularly by cultural and political factors which may nonetheless encourage and accelerate entrepreneurial decisions (Baumol, 1990). However, the improvement of business conditions, support for the entrepreneurial spirit, the development of flexible labour markets, support for investments in education and science, research and innovations, and the security of the energy market are permanent factors for changing strategy for all players in the business environment in terms of the stability of the economic environment (Kuzmišin, 2009; Virglerova et al., 2016; An-droniceanu, 2011; Thai and Turkina, 2014; Dabija et al., 2014). One may also mention the importance of new academic ventures (Vekic et al., 2020).

1.2. Local business policy and sustainability factors

Regional governments today are not in an easy position. The competitiveness of regions largely depends on internal learning and innovation abilities in the examined region. In many case studies, firms with between 10 and 49 employees are proactive in the process of ongoing learning and innovative processes. They are still under pressure from the market to offer unique products or services in order to survive and to be competitive. There exist qualitative and quantitative barriers to supporting an innovative climate within an organisation based on the owner's personality, financial resources and other competencies which could lead to a low level of innovative activity (Ćwik, 2007). On the other hand, those factors cause significant changes on the labour market. Governmental policies are crucial because they set the rules for "playing" on the market (High, 2009). Policy makers have paid significant attention to

supporting and encouraging entrepreneurship for years now; for this reason, they often modify their approach and initiatives according to the economic cycle (Spar, 2001; Wennekers et al., 2002; Petty and Bonardi, 2006; Honig and Karlsson, 2014) through tax reductions and education (Poterba, 1989; Verheul et al., 2002). The impact of this situation is well documented and reduces the level of uncertainty for entrepreneurs, but the connection as a whole must produce more entrepreneurial activity and progress which predominantly supports start-up stages, but not a transition among the lifecycle stages of businesses (Freytag and Thurik, 2006; Demirguc-Kunt et al., 2006; Grigore and Drăgan, 2015; Hsieh et al., 2018; Hsu et al., 2019).

Since the entrepreneur and entrepreneurship is predominantly defined from the static point of view (Gartner, 1985; Yamada, 2004; Steyaert, 2007), under unchanged market conditions and often without the recorded uncertainties in the environment, the area of entrepreneurship among small and medium-sized enterprises was selected, where the entrepreneur meets both of the criteria from the definitions above, in terms of (i) being in everyday contact with his customers and therefore covering the responsibilities of an expert, manager and entrepreneur, often as one person (dialogue is expected), and (ii) continuously creating something new for the customer (innovation is expected) with the subsequent achievement of sustainability. The sustainability of entrepreneurship and its measurability or investigation of the future of the business is based on the practical application of the results of empirical analysis, such as the generation of a business model according to which entrepreneurs attempt to implement their strategy (Wach, 2020). From the point of view of sustainability, a business model is understood as a long-term concept of an enterprise that

includes the “structure of products, services and information flows, which generate and bring value” (Osterwalder et al., 2010).

For the evaluation of the factors in entrepreneurship sustainability, it is possible to employ a conceptual model that concentrates findings from the analysis of results which lead to entrepreneurial success factors. These success factors were researched applying the approach based on the SSP model (Strategy-Structure-Performance model) that sees such a strategy which is accompanied by changes in the enterprise as a consequence of the response to a changing environment, albeit in combination with resource management, as important (Lo, 2013). Human resource management is subordinated to long-term goals and the effectiveness of the selected strategy (Chandler, 1962; Ansoff, 1965; Baumol, 1990). The followers of this method have added another item – the impact of the external environment, which actively deviates the successful implementation of the strategy (Pfeffer and Salancik, 1978; Prajogo, 2016). Finally, sustainability means finding a new combination of resources and opportunities in such a way as to enable an enterprise to adapt to new conditions as soon as possible. The sustainability of entrepreneurship is difficult to estimate because, similarly to objectives, it reflects a future situation (Šebestová and Sroka, 2020).

A region's level of development, and entrepreneurial contributions to this development, should not be measured only by means of GDP. Each region has particular social, cultural, economic, and other attributes, which cannot be measured by GDP output (Palevičienė and Dumčiuvienė, 2015; Kallas, 2019; Ciešlik, 2017; Bögenhold, 2019). Groșanu et al., (2015) and Price et al., (2011) mentioned the positive relationship between the quality of country-level governance and more effective

allocations of economic resources, stimulating economic development and the competitiveness of the business environment. As is widely known, regional socioeconomic analysis is mostly based on three pillars which assess the impact of various actions on regional entrepreneurial policy. These pillars are economic (dynamics of economic development); social (investments in social capital, the main indicator of societal development); and environmental (including eco-friendly approaches, recycling, etc.). The main objective of societal development is to balance these three pillars (Harfst and Wirth, 2011; Minařík et al., 2013; Neffke et al., 2018). In this context, Kapstein and Kim (2011) presented a fully developed matrix of socioeconomic impacts on local communities, including four dimensions: (i) macroeconomic impacts (GDP contribution and other macroeconomic indicators); (ii) socioeconomic impacts and linkages (education, employment); (iii) community impacts (changes in settlement, social structure, migration); and (iv) environmental impacts (pollution, investments in environmental protection).

This theoretical background is supported by the World Bank's Global Enterprise Survey on Doing Business across countries, firstly analysed by Klapper et al., (2009), or alternative indexes such as the index of globalisation (KOF) presented by the Swiss Economic Institute. The evaluation of those activities and factors influencing the business environment is closely connected with local and systemic entrepreneurship, defined by Sautet (2013), where local entrepreneurship is defined as entrepreneurship on a local (in this case regional) level and systemic entrepreneurship means entrepreneurship on a national level. Following that, the local and systemic approach will be applied in this paper to make it possible to compare different layers of the business environment

in both countries in terms of supporting business activities in regions undergoing structural change – the Moravian-Silesian region, with greater experience thereof, and Shanxi province, which could make use of the research results.

2. Methodology

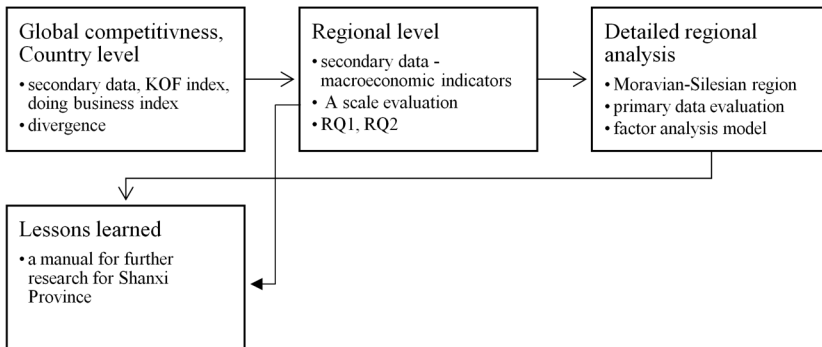
A complex evaluation of the business environment in both China and Czechia from the regional point of view presents a significant challenge (Liang, 1999). In this case, China and Czechia were chosen due to long-term trade cooperation between countries (the first business cooperation treaty from 1928) and the negative long-term export balance from Czechia to China, where export turnover from China has grown more than threefold. To illustrate our analysis at a macroeconomic and regional level, we have chosen two independent regions which are both faced with the interrelated problems of changes in industry, high levels of unemployment and a lack of innovative business activity. The chosen regions are the Moravian-Silesian Region (NUTS II) in Czechia and Shanxi Province in China. These regions have been chosen because both are inland economies. Shanxi Province is in the process of transformation from a resource-based economy to a diversified industrial economy with a clean, safe and efficient modern energy system (Krug, 2002). The unemployment rate in Shanxi Province remains around 3.2%, which is comparable to the Moravian-Silesian Region. The commercial activities of Shanxi Province are active, but the level of innovation is insufficient; the same situation may be observed in the Czech region, albeit both local governments support innovation activities. The sustainable viability of enterprises is weak in both regions (Shanxi statistical yearbook, 2019; Czech statistical office, 2019). For this reason, we have applied not only the abovementioned meth-

odology but also the study by Lundstrom et al., (2008) and the European Commission's (2012) structure of indicator systems. We have also proposed our own indicator system for use in evaluating the sustainability of the entrepreneurial environment of the Moravian-Silesian Region, based on questionnaire research and relevant literature, to be a case study and starting point for an analysis of Shanxi Province using secondary data. We have selected these regions so as to deepen our knowledge of regional conditions for entrepreneurship for sustainable development, in order to answer the following research questions based on studies by Cuervo-Cazurra et al., (2007), Berry et al., (2010), Amal et al., (2013), and Sardana and Zhu (2015), examining the relationship between company competitiveness and business environment on a national or international level:

- RQ 1: In comparison to the national level of quality evaluation of the business environment – are there any similar trends and factors on the regional level?
- RQ2: Is it possible to find relationships among economic, social or community impacts on the regional (NUTS II) or provincial level?

The analytical part contains three levels of evaluation. Firstly, a global comparison has been made to evaluate the global position of both economies in terms of economic and trade competitiveness, using the Index of Globalisation (KOF index) for the last seven years (2013-2020). Secondly, a national level of business environment comparison, leading to sustainable business was made, using the World Bank's Doing Business Index (Figure 1).

Figure 1. Analytical framework of the paper



Source: Own elaboration.

Finally, local comparison on a regional level will be made by means of the application of Kapstein and Kim's (2011) matrix of local impacts. Those analyses are fully dependent on secondary data sources, namely the World Bank, the Swiss Economic Institute, the Czech Statistical Office and the Chinese statistical office. When limited to the timeframe of 2012-2019 (2020) to obtain comparable data for Chi-

na and the Czech Republic, the traditional time series method of evaluation was not possible. Due to this limitation of the comparison, alternative means of time series evaluation were used: (1) **A divergence between two time series** (the KOF index and the Doing Business index) to evaluate the similarity between the development of selected indicators of trade and economic globalisation. This approach follows the

Kullback–Leibler (1951) divergence approach to simulate how far the distribution of one time series (China, P) is from the

other distribution (Czechia, Q) to describe the development of conditions on a global (systemic) level. It was defined as:

$$D_{KL}(P \parallel Q) = - \sum_{x \in X} p(x) \log q(x) + \sum_{x \in X} p(x) \log p(x) = H(P, Q) - H(P) \quad [1],$$

where $H(P, Q)$ is the cross entropy of P and Q, and $H(P)$ is the entropy of P, which is the same as the cross-entropy of P with itself (Novak, 2011).

(2) A scale evaluation <1;3;5> for annual change in regional indicators (applied in the local environment evaluation in section

3.1) is based on the index method, where 1 means a decline of more than – 20%, 3 means a change <-20 %; 20% > and 5 means growth of more than 20%, whereby the year 2013 is a baseline for evaluation (Šebestová and Palová, 2016):

$$Index_{20XX/2013} = \frac{Indicator_{20XX} - Indicator_{2013}}{Indicator_{2013}} * 100[\%] \quad [2],$$

In the second part of the paper, a case study based on primary data is presented. Quantitatively-oriented primary research was conducted in the form of **a questionnaire in the Moravian-Silesian Region only**. The key task of our questionnaire-based research was to ascertain the respondents' awareness of and attitudes towards the basic elements of cooperation within the region, including the municipality, entrepreneurs, and the definition of factors influencing small and medium-sized enterprises in the Moravian-Silesian Region. In order to analyse entrepreneurship sustainability in the Moravian-Silesian Region, enterprises functioning for less than three years were not selected, i.e. the sample was required to contain businesses that existed on 1 January 2015. The classification of the age of each enterprise was based on the methodology of the GEM, which considered an enterprise operating for a period of more than 42 months to be an established business (Lukeš and Jakl, 2012). The questionnaire covered four significant areas that form the basis of our analysis and are the foundation for the generation of our model. The questionnaire structure corresponded to the cross-section of activities connected with the respondent's business:

- The main motivation for founding an enterprise and an evaluation of the environment for micro-financing, co-operation, and change of legal status;
- Description of barriers or problems which could lead to the termination of activities in an industry, based on analysis of the Porter forces within an industry;
- Relationships with institutions (the Moravian-Silesian Region, municipalities);

The data had to be sorted; respondents who did not meet the criteria (size, location in the Moravian-Silesian Region) were removed from the sample, finally giving a total of 215 valid respondents. The original sample size consisted of 215 respondents (while the minimum was computed on 153 respondents); the sample was representative of the original structure of businesses in the region (CSO, 2018). The researchers conducted several random checks for internal consistency in responses when Cronbach's Alpha was 0.845 for the whole sample.

3. Research results

Each regional policy is interested in supporting sustainable innovations and sustainable businesses, especially in regions undergoing sectoral change (a transition from heavy industry to high-tech and services). For cross-country comparison, the globalisation overall index (globalisation index de facto; KOFGI_{df}, Gygli et al.,

2019) including economic, social, political globalisation and two sub-indexes were chosen – the economic globalisation index (KOFECGI_{df}) and the trade globalisation index (KOFTRI_{df}) - for recent reports evaluating the year 2017 as the most recent available for both countries as presented in Table 1.

Table 1. Comparison of globalisation indexes 2012-2017

	2012	2013	2014	2015	2016	2017	Sum of divergence
Globalisation Index (KOFGI_{df})							
China/CZ	7.13	6.96	6.93	7.19	7.27	7.48	42.95
CZ/Europe and Central Asia	20.39	19.92	20.28	20.33	20.09	20.71	121.72
China/Europe and Central Asia	14.26	13.81	13.23	14.68	15.39	16.00	87.38
Globalisation Economic Index (KOFECGI_{df})							
China/CZ	10.75	10.73	10.88	11.31	11.36	11.91	66.93
CZ/Europe and Central Asia	8.53	8.65	9.74	9.18	8.76	11.54	56.40
China/Europe and Central Asia	53.93	53.69	53.83	59.20	60.32	62.40	343.37
Globalisation Trade Index (KOFTRI_{df})							
China/CZ	11.25	11.32	11.66	11.81	11.82	11.88	69.75
CZ/Europe and Central Asia	14.48	14.09	16.41	16.71	16.26	14.45	92.41
China/Europe and Central Asia	54.86	56.89	58.24	62.97	65.04	67.90	365.89

Source: Gygli, 2019, formula [1] used.

In the case of economic globalisation, which covers all criteria of evaluation, the development of countries (simulated by divergence) is broadly similar and is the lowest in comparison (42.95), but the divergence between China and Czechia will be higher in the future, so we expect a more globalised policy in China than in Czechia. This trend is supported by “regional comparison”, whereby the divergence between Czechia and Europe and Central Asia is one-and-a-half times higher than the divergence with China. By contrast, economic globalisation (KOFECGI_{df}) on a national level is more positive for Czechia, whose divergence to the region is the lowest. This indicator covers economic factors (trade in goods, services and diversity in terms

of trade partners), but also trade globalisation, covering foreign direct investment, investment restrictions, portfolio investment, capital account, international debt, investment agreements, international reserves and international income payments. Upon finding Czechia to be in a relatively stronger position, we decided to examine the divergence of the trade globalisation index (KOFTRI_{df}), which confirmed the strong position of Czechia in terms of international investments, FDI and capital openness to multinational companies. On the contrary, China is a global investor, so its position is more divergent according to that indicator.

Inter-country differences are illustrated by standard seven-year deviations in 12 in-

dex sub-pillars. All the observed countries have reached quite similar positions and improved their scores on the Doing Business index over the last seven years and divergences in key indicators (Table 2).

Table 2. Doing Business index evaluation for China and Czechia 2012-2020

	2012	2013	2014	2015	2016	2017	2018	2019	2020	Sum of Divergence
Ease of doing business	4.50	4.61	4.84	5.03	5.10	4.71	4.49	1.00	-0.59	33.69
Starting a business	9.64	4.45	3.02	2.88	0.08	0.06	-0.70	-0.90	-5.17	13.36
Getting credit	4.90	4.90	3.96	7.31	7.31	4.02	4.02	4.02	4.02	44.44
Protecting minority investors	5.12	5.12	3.97	2.48	2.48	2.48	2.48	0.00	-4.68	19.44
Paying taxes	4.10	6.83	6.73	5.50	7.73	7.88	6.84	5.79	5.05	56.45
Trading across borders	1.84	2.23	2.28	10.23	10.23	10.23	10.23	6.41	5.19	58.88
Enforcing contracts	-1.61	-1.61	-0.82	-0.82	-11.49	-11.49	-11.49	-11.49	-13.12	-63.94
Resolving insolvency	6.95	7.07	8.49	8.58	8.62	8.59	8.67	8.74	6.87	72.56

Source: World Business, 2020; formula [1] used.

The inter-country comparison reveals China's competitive advantage in the areas of starting a business and protecting minority investors when compared to Czechia (CZ) (represented by the smallest divergence). In contrast, Czechia has a competitive advantage in the area of enforcing contracts (represented by negative divergence).

China has made great efforts to improve the domestic business environment for small and medium-sized enterprises, maintained a positive pace of reform, and made commendable progress in a number of business environment indicators, especially in the field of construction permits. China has implemented eight record business environment reforms in the 12 months to 1 May 2020, ranking 31st in terms of global business facilitation, scoring 77.9 out of 100 points. China's recent reforms have placed it among the most efficient economies in which to execute contracts. The average time taken for local entrepreneurs to resolve business disputes is 496 days, and the cost is 16.2% of the claim amount, which is better than

the regional average. China has improved the quality of its judicial administration. At present, it scores 17 out of 18 points in this index, which is not bettered by any other economy in the world. Despite great progress, China still lags behind in areas such as tax (No. 105), access to credit (No. 80) and cross-border trade (No. 56). China's export border compliance takes 21 hours and costs US \$256, which is longer and more expensive than the high-income OECD economies. China's corporate tax compliance takes an average of 138 hours a year, compared with 64 hours in Singapore, a finding which is supported by a study by Sardana and Zhu (2015). On the national level, the policy of business development in both countries is broadly similar, but with greater progress in China (World Bank, 2020).

3.1. Local entrepreneurship evaluation

As presented in section 2, Shanxi Province and the Moravian-Silesian Region were selected for the evaluation of local conditions. In that part, those regions are

briefly described and the impact on sustainability is calculated. Finally, an evaluation of the conditions which lead to advantages is undertaken.

Shanxi Province, named after its location to the west of Taihang Mountain, is one of the birthplaces of the Chinese nation, which has a recorded history dating back 3000 years. It is known as the cradle of Chinese civilisation and a museum of ancient Chinese culture. Shanxi Province is located in the east of the Loess Plateau in the west of northern China, with a total area of 156,700 square kilometres. Generally speaking, the landform is a mountainous plateau widely covered by loess. The geomorphic types are complex and diverse, including mountains, hills, plateaus, basins and platforms, among which mountains and hills account for 80% and plateaus, basins and platforms account for 20%. As of the end of 2019, the permanent population was 37.29 million. As a major source of natural resources in China, Shanxi has one-third of the coal reserves in the country. The output value of coal accounts for half of the total output value of Shanxi. If the coke, metallurgy and electric power industries closely related to coal are taken into account, the four traditional industries account for more than 70% of Shanxi's total industrial output value. The coal market has been in a depressed state after the "golden decade" of 1998-2008. On the one hand, there is a surplus of coal supply. The huge production capacity formed by rising investment during the industrial boom period and the production of large-scale modern mines after the integration of coal resources has seen domestic coal enterprises enter a period characterised by the concentrated release of production capacity (Dong and Huo, 2015). Furthermore, with the influence of imported coal, the domestic coal supply is very low. On the other hand, affected by the continuous downturn of the

global economy, the transformation of the stage of domestic economic growth and the increased pressure of environmental protection, the speed of development of the main industries downstream from coal, such as power, steel, cement and fertiliser, has slowed down, so the growth in demand for coal is weak. Oversupply and insufficient demand have kept the price of coal low, which is the main reason for the difficulties of coal enterprises. First of all, in terms of the composition of the three major industries of GDP, the proportion of the second industry has declined from more than 50% to more than 40% from 2013 to 2019, of which the proportion of the industry is 34.18%; the proportion of the first industry is declining, and the rise of the third industry (the service industry) is relatively rapid. The low proportion of the agriculture and service industries in total GDP shows that the development of these industries in Shanxi Province is lagging. The above analysis shows that the current economic development of Shanxi is still in the middle stage of industrialisation (Shanxi statistical yearbook, 2019; Goodman, 2000). In 2019, the number of enterprises in Shanxi Province was 600,802. Among them, the number of enterprises in the first industry was 99,121, including food, planting, forestry, animal husbandry, aquaculture and other industries that directly produce natural objects. The number of enterprises in the second industry is 77,335, mainly referring to processing and manufacturing industries, which use the basic materials provided by nature and the first industry for processing. The number of enterprises in the tertiary industry is 424,346, which refers to other industries (the modern service industry or commerce) other than the primary and secondary industries, with a relatively wide range of services included therein, mainly including non-material production sectors such as the transportation

industry, the communication industry, commerce, the catering industry, the financial industry, education, public services, and so on (more macroeconomic indicators can be found in Appendix A).

Shanxi, as an inland province in the middle of China, is at a disadvantage in terms of technology, systems, capital, economic structure and human resources. At the technical level, there is a lack of long-term basic investment in important fields and key technologies, and there is a significant gap with developed countries and China's developed provinces. On the institutional level, although there is a relatively perfect socialist market economy system and socialist legal system, it should also be noted that there are still many problems in Shanxi, such as government intervention, ineffective market mechanism, the unreasonable allocation of resources, excessive differences in income distribution, an unstable contractual relationship, etc., which will greatly affect the efficiency of resource allocation and use, resulting in the disposal of idle resources and waste. On the capital level, the development of regional science and technology finance is weak. In 2017, the venture capital guidance fund in Shanxi Province was worth only 6.6 billion dollars, whereas the top-ranked venture capital guidance fund in Guangdong Province was worth 199.8 billion dollars; the investment scale of science and technology start-ups in Shanxi Province was only 600 million dollars, whereas that of Beijing, the largest, was 139.3 billion dollars. The development of regional science and technology finance in Shanxi Province has been greatly restricted, so it limits the development of science and technology start-up enterprises in Shanxi. In the absence of a perfect value chain and industrial chain, Shanxi is also at a disadvantage when it comes to undertaking international or domestic industrial transfers.

The failure to successfully undertake international or domestic industrial transfers limits Shanxi's possibilities of opening up further. In terms of human resources, in the era of technology, there is still a long way to go when it comes to the cultivation of a high-end labour force in Shanxi Province. At present, focusing on the construction goal of the new industrial system and on the basis of consolidating and strengthening the five major industries (the modern coal chemical industry, high-end equipment manufacturing, new energy vehicles, new materials and new generation information technology), Shanxi Province has established a new path to highlighting the cultivation of photovoltaic manufacturing and application, general aviation, cultural tourism, medical health and solid waste utilisation, and has carried out industrial planning, set up industrial development funds and special funds for talent development, introduced incentive policies to attract investment and provided support for key industries and projects (Cao, 2017; Liu et al, 2018).

The Moravian-Silesian Region is typical of regions dominated by the automotive industry and IT clusters. Traditional mining and heavy machinery have been largely replaced by automotive and IT in the last 15 years. Within the engineering industry, a significant restructuring is taking place from the production of structures and large machines to the development of precise machine-tools. Excluding traditional industries, high-tech branches have been increasing in importance in the local economy. Pharmaceuticals and IT services are perhaps the best examples of such fast-growing industries. The total population of the region was 1,203,292 (men 49.1%, women 50.9%) in 2019, which makes it the third-most populous region in the Czech Republic. Nowadays 349,232 business units are active and the current

unemployment rate is 4.6%. In 2017, the region generated 9.4% of the national GDP, which amounted to €18.0b. Regional GDP per capita in standard units of purchasing power was €22,100, which is 82% of the national level of €26,900 and 74% of the EU average level (Eurostat, 2019). The unemployment rate in 2018 was 3.7%, which is the highest in the country and considerably above the national rate of 2.2% (Eurostat, 2019). Despite the modernisation of many companies, innovation activities in the business sector are below average (more macroeconomic indicators in Appendix B). The Moravian-Silesian Region is traditionally considered a problematic region. In the past, it underwent fairly major structural changes, which brought with them a higher unemployment rate and a higher proportion of long-term unemployment compared with other Czech regions due to mining, coal and heavy industry. There are more than 230 foreign investors in the region. In the business dimension, the region has seen the following major developments over the past few years in terms of the number of foreign firms with

their own R&D in the region (e.g. Siemens, ABB, Varroc, Tieto, Continental etc.) and in the growth of R&D autonomy of foreign affiliates, leading to an increase in the number and quality of R&D contracts received from headquarters. When those regions were qualitatively described, they have quite similar goals (✓) for their regional strategies for the period of 2014-2020 (Table 3), mainly focused on the areas of sustainable materials, nanotechnology, new models of production and human resources for R&D. Both regions are locally oriented, in that most small businesses operate on the local market. One difference which may be discerned is the more variable forms of business units in Shanxi (Goodmann, 2002) due to the current political system in China (state-owned enterprises, collectives, equity-based companies, joint ventures and private enterprises), but Czechia also has several state-owned companies so the system of business forms is mostly comparable for both countries due to the previous socialist political system of Czechoslovakia in place prior to 1989.

Table 3. Comparison of local development goals.

Priority	Region	Shanxi Province (CHN)	Moravian-Silesian-Region (CZ)
Sustainable materials, nanotechnology		✓	✓
New models of production - digitalisation, automatisisation		✓	✓
Technologies for networks, transfers		✓	✓
New tech for steel production		✓	✓
Agriculture and its innovations		✓	-
Quality of life		✓	✓
Human resources for R&D		✓	✓

Source: Own elaboration based on MSID (2014) and Liu et al., (2018).

Following the methodology of Kapstein and Kim (2011), we divided the indicators into four groups. We added the share of patents and research growth to the community impact group as a measurable input of innovation in both regions. Other indicators were chosen to be compatible with

measurements of regional and national strategies (MSID, 2014; Ruan et al., 2020). As a baseline for macroeconomic indicators, we chose the year 2013 as a starting point because our study was limited by the availability of regional data in the Moravian-Silesian region and Shanxi and the com-

patibility thereof. We used a nominal scale <1;3;5> for the yearly change in regional indicators, where the highest score represents the best local performance. Our structure of the indicators was as follows:

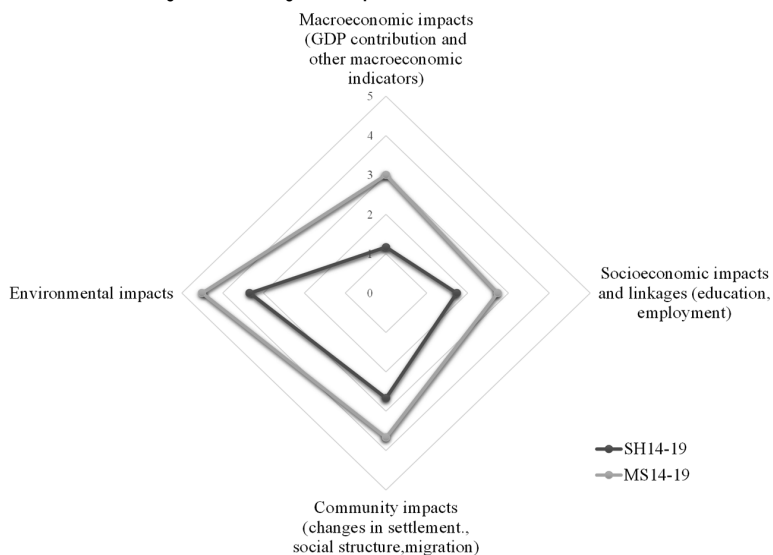
- **Macroeconomic impacts** (GDP contribution and other macroeconomic indicators, two indicators) measured by GDP growth and the disposable income of private households.
- **Socioeconomic impacts and linkages** (education, employment, five indicators), where we included wages and salaries, the employment rate, the unemployment rate, tertiary educational attainment, population in the 25-64 age group and changes in business units.
- **Community impacts** (changes in settlement, social structure, four indicators), which we described using population growth, people at risk of poverty or social exclusion, total pat-

ents per region (by inventors), and the number of researchers.

- **Environmental impacts** (2 indicators) as showed by the percentage of the population connected to wastewater collection and treatment systems and regional environmental protection expenditures.

These indicators were calculated separately for each year and finally evaluated on a nominal scale. Finally, the average value of each part is presented in Figure 2 below. The best results in most of the four dimensions examined were obtained in environmental and community impacts for both regions. On the other hand, when macroeconomic impacts were very low, the same direct effect could be seen on socioeconomic impacts. Finally, we could confirm an indirect relationship between environmental indicators and community impact.

Figure 2. Interregional impact of the business environment



Source: Evaluation based on appendix A and B and formula [2] used; Shanxi (SH14-19) and Moravian-Silesian (MS14-19).

A detailed evaluation on an annual basis could help to discern the strengths and weaknesses in the growth of both regions.

Macroeconomic and social impacts are closely connected and actively affect regional development (Table 4).

Table 4. Change in macroeconomic and social impacts

		Macroeconomic impacts (GDP contribution and other macroeconomic indicators), % change						Socioeconomic impacts and linkages (education, employment), % change									
year	GDP growth	Scale	Disposable income of private households	Scale	Average value	Wages and Salaries	Scale	Employment rate	Scale	Unemployment rate	Scale	Tertiary educational attainment. 25-64 age group	Scale	Business units	Scale	Average value	
China/Shanxi	2014	-46	1	-18	3	2	-77	1	-141	1	10	3	-114	1	0	3	1.8
	2015	-67	1	-31	1	1	-77	1	-141	1	13	3	-20	1	17	3	1.8
	2016	-50	1	-42	1	1	-94	1	-134	1	14	3	-194	1	7	3	1.8
	2017	-21	1	-37	1	1	-10	3	-106	1	10	3	-104	1	-23	1	1.8
	2018	-26	1	-33	1	1	-23	1	-111	1	6	3	-118	1	-31	1	1.4
	2019	-31	1	-27	1	1	-47	1	-58	1	9	3	-92	1	-5	3	1.8
CZ/MSK	2014	7	3	-8	3	3	1	3	2	3	-13	1	-4	3	1	3	2.6
	2015	8	3	4	3	3	5	3	11	3	-13	1	5	3	1	3	2.6
	2016	7	3	-12	3	3	9	3	14	3	-25	1	11	3	1	3	2.6
	2017	7	3	-14	3	3	15	3	14	3	-42	1	17	3	2	3	2.6
	2018	7	3	-14	3	3	25	5	15	3	-53	1	16	3	3	3	3
	2019	11	3	-7	3	3	35	5	13	3	-55	1	16	3	3	3	3

Source: A scale evaluation of indicators was used, based on formula [2].

Shanxi Province obtained a low score in macroeconomic indicators, which indirectly affected the situation in the socio-economic area, whereby the score is much higher and reflects societal development. By contrast, the Moravian-Silesian region has the same average scores in both areas, so the link between social and economic influence on regional growth is clearly visible.

Environmental and community impacts are the other two dimensions which influence each other and the wellbeing and prosperity of the region. As illustrated in Table 5, the regional development of both localities is stable (see the column Σ score,

which represents the score from Tables 4 and 5), albeit slowly increasing. Problems in population growth and research capacities are visible in both locations. A more positive trend are investments in environment protection, which could help to sustain community life and finally business production.

Table 5. Percentage change in environmental and community impacts (%)

	Year	Community impacts (changes in settlement, social structure, migration)							Environmental impacts							
		Population growth Scale	People at risk of poverty or social exclusion Scale	Total patents - inventors Scale	Researchers Scale	Average value	Population connected to wastewater collection and treatment systems Scale	Environmental protection expenditure Scale	Average value	Σ scores						
China/Shanxi	2014	-6	3	-40	1	-92	1	-99	1	1.5	-308	1	-26	1	1.5	21
	2015	-17	3	2	3	-155	1	-480	1	2	-319	1	39	3	2.5	23
	2016	-8	3	-1	3	229	5	41	5	4	-117	1	143	5	3.5	33
	2017	2	3	70	5	-123	1	393	5	3.5	-8	3	102	5	5.5	33
	2018	-19	3	179	5	86	5	-204	1	3.5	-130	1	284	5	3.5	29
	2019	-8	3	-38	1	-9	1	-58	1	1.5	-125	1	107	5	3.5	23
CZ/MSK	2014	-13	3	13	3	72	5	10	3	3.5	1	3	28	5	5.5	41
	2015	-8	3	13	3	78	5	26	5	4	1	3	49	5	5.5	43
	2016	-27	1	13	3	163	5	31	5	3.5	1	3	-20	1	3.5	37
	2017	-15	3	6	3	106	5	39	5	4	0	3	-27	1	3.5	39
	2018	-45	1	7	3	66	5	48	5	3.5	1	3	5	3	4.5	41
	2019	-41	1	5	3	72	5	31	5	3.5	1	3	3	3	4.5	41

Source: A scale evaluation of indicators was used, based on formula [2].

A comparison of two layers of factors leading to regional growth represented by a systemic and local point of view have shown that, when it comes to regional growth, we need to examine local capabilities and the local impact of municipalities on business activity to support sustainable business development.

3.2. Regional case study: Lessons learned from the Moravian-Silesian region

The regional business environment represents supportive infrastructure for entrepreneurship, such as entrepreneurship-friendly laws, regulations in the area of establishing a business, and the existence of supportive services for business founders as well as for established firms. Spatial analysis is needed to identify deeper con-

nections between the location of companies and their local business conditions in order to evaluate the regional business environment in the Moravian-Silesian Region. The existence of regional entrepreneurship sub-environments is one theoretically plausible explanation for spatial variations in entrepreneurship activity within districts; this has already been demonstrated within national and regional contexts. The percentage of respondents in each district corresponds to the structure of economically active enterprises within the Moravian-Silesian Region. The willingness of entrepreneurs (N=215) to take part in research played an important role. The owners of limited liability companies (17.73%) or joint stock companies (1.69%) were more informative, which may result from the fact that these owners have employees, allow-

ing them to dedicate time to the survey without compromising their other daily tasks. Self-employed people (63.02%) and non-profits and cooperatives (17.56%) also participated. The survey includes companies from the following sectors: agriculture (1.86%), industrial production (10.70%), the construction industry (13.95%), public service (3.256%), business (36.28%) and services (33.95%). If we look at the pattern in terms of number of employees, companies with up to nine employees comprise the largest category (46.05%). In second place are small enterprises (10-49 employees; 27.44%), where the actual number of employees is closer to the lower limit. Medium-sized enterprises (14.88%) and enterprises without employees (11.63%) are also significantly represented.

3.2.1. Key results

The method of principal component analysis (PCA) was applied for the extraction

of factors in the form of explanatory factor analysis (EFA). The objective of this method is to find the underlying and therefore hidden (artificial, non-measurable, latent) variables (hereafter referred to as components) that sufficiently explain the original variability of the variables; Varimax factor rotation was employed. Following this procedure, we were able to model our table of significant factors in the region. Finally, the lessons learned from the Moravian-Silesian Region are presented in a sustainability index proposal. Factor analysis (see Table 6) revealed most of the important areas related to regional entrepreneurship, where 11 factor groups were extracted and the explanatory power of this model was 62.934%. Basic tests to rate the adequacy of the sample for the analysis were conducted (Kaiser-Meyer-Olkin Measure of Sampling Adequacy 0.637, Bartlett's Test of Sphericity - Approx. Chi-Square 841,496, $df=153$, $Sig.=0.000$).

Table 6. Rotation Component matrix results

Factor	Factor group name / % variance explained	Variables (factor loading)
F1	Factors Supporting Entrepreneurship (18.4%)	Export incentives (0.769) Available housing for employees (0.703) Range of available tendering procedures (0.700)
F2	Influence of the Municipality on Business (15.3%)	Prepared business zones (0.808) Support for entrepreneurship (0.804) Purchase of real estate in the ownership of the enterprises (0.718) Helpfulness of clerks (0.609)
F3	Relationships and Networks (12.5%)	Sufficient number of purchasers/clients (0.707) Quality of the labour force (0.648)
F4	Access to Regional Information (9.9%)	Subsidies for technologies (0.748) Knowledge of the regional website (0.607)
F5	Projects (8.0%)	Implementation of educational projects (0.830) Project realisation within the region (0.690)
F6	National Policy Impact (7.2%)	Legislation, generally binding decrees (0.821) Helpfulness of public administration, bureaucracy (0.812)
F7	Regional Policy Impact (6.5%)	Remains of the earlier industrial activities in the region (0.750) Regional subsidy policy (0.716)
F8	Green Approach (6.1%)	Real estate (0.765) Energy-saving projects (0.683)
F9	Enterprise Localisation (5.9%)	Actual localisation in the region (0.821) Transport accessibility (0.739)
F10	Satisfaction (5.2%)	Satisfaction (0.823)
F11	Entrepreneurial Spirit (5.0%)	Main motivation for launching a start-up (0.719) Tradition in entrepreneurship (0.634)

Source: Own elaboration. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation.

These groups of factors were subsequently named after the components they contained and were divided into three main functional groups according to Hoffmann et al., 2009; see also: the EU Commission, 2012; Duhaime et al., 2011; Moen, 2016), in combination with the SSP model (Lo, 2013) as follows:

- **Determinants of entrepreneurship** (six factor groups F1, F2, F4, F6, F7 and F9), from the business point of view (strategy layer). In the area of determinants of entrepreneurship, the following factor groups have been found to have the most effect on entrepreneurial behaviour: (1) factors supporting entrepreneurship, which stimulate the sustainability of entrepreneurship in the region together with support for export activity (F1); (2) the influence of the municipality on business: this depends heavily on the location of the operation of the business' activities, the availability of premises and other factors (F2); (3) access to regional information, the significance of which lies in active use of information from the regional website, particularly in the area of subsidies, contracts, analyses and guidelines. This is also connected with the factor of the lack of information, if the website has not been used (F4); (4) the impact of national and regional policies are perceived from the point of view of cooperation with public administration and legislative changes (F6, F7); (5) enterprise localisation: the important aspect here is transport accessibility and the actual location of the business in the region. Simultaneously, the entrepreneur must come to terms with the characteristics of the entire region (F9).
- In the area of **entrepreneurial performance** (two factor groups, F5 and F8),

sustainability is influenced by projects where the supporting factor is experience in project implementation, additional motivation for projects and experience with a certain type of subsidy for the start-up. This approach is closely connected with ecological behaviour.

- Factors which impact **sustainability** (three factor groups; F3, F10 and F11) describe changes in the structures of networks and internal structures of enterprises. Total impact on the sustainability of entrepreneurship involves the following factor groups: (1) development of relationships and networks shows how to keep business in the region. This factor is connected with the development of entrepreneurial activities and with the building and strengthening of partnerships within the region; (2) satisfaction in the region, where the important aspects are total satisfaction in the region and the influence of business traditions. Total satisfaction has a negative relationship to determinants of entrepreneurship, which means that if an entrepreneur is not satisfied in the region, he will leave, thus disrupting the entrepreneurial tradition and entrepreneurial spirit.

3.2.2. Key indicator evaluation:

A manual proposal

The key factors in supporting new start-ups are not just suitable localisation but also having a sufficiently high number of customers/purchasers, which is connected to the problem of depopulation and migration. The influence of the labour force has also been mentioned. We expect an evaluation of these areas using a combination of quantitative and qualitative data research in each region. Following that, factor group loadings could help us to create

“weights” in each section (based on factor analysis, Table 6). In accordance with this, a proposal for principal area evaluation was provided. Table 7 could be used for inter-district policy impact evaluation, or on a regional level to support regional growth e.g. Shanxi province. This study could also be used for interregional com-

parison, in which case standardised data would be used. It seems that external factors, based on previously evaluated factor analysis, create more that 63.2% of the effect on the sustainability and longevity of entrepreneurial entities in the Moravian-Silesian Region.

Table 7. Possible evaluation table for a sustainable business environment

Evaluation table							
DETERMINANTS OF SUSTAINABLE ENTREPRENEURSHIP (STRATEGY LAYER)							
		Action	Actors	Data Sources	Indicators	Trend <-10;10>	Weight in evaluation
F1	Factors Supporting Entrepreneurship	Central database of available storage and production locations, export opportunities	Municipalities, property owners	Property owners, real estate agencies, municipalities	New contracts, total exports	↗→↘	18.4%
F2	Influence of the Municipality on Business	Support for local strategy plans, cooperation, and local education	Local government, municipalities, community	Strategy plans, questionnaire on satisfaction	Number of entrepreneurs, trends in satisfaction	↗→↘	15.3%
F4	Access to Regional Information	Actual regional government websites	Local government	Access monitoring	Number in active use	↗→↘	9.9%
F6	National policy impact	Information campaign	Local government, municipalities	Questionnaire on satisfaction	Trends in satisfaction	↗→↘	7.2%
F7	Regional policy impact					↗→↘	6.5%
F9	Enterprise Localisation	Support for infrastructure	Local government, municipalities	Questionnaire on satisfaction	Number of entrepreneurs	↗→↘	5.9%
Total weight – pillar I							63.2%
ENTREPRENEURIAL PERFORMANCE							
F5	Projects	Supporting infrastructure for projects	Local government, municipalities, community	Questionnaire, statistical office	Number of projects realised	↗→↘	8.0%
F8	Green Approach	Reporting	Entrepreneurs	Questionnaire, statistical office	Innovations, eco labels	↗→↘	6.1%
Total weight – pillar II							14.1%
IMPACT FACTORS ON SUSTAINABILITY							
F3	Relationships and Networks	Circles of cooperation at a local level	Local government, municipalities, community, entrepreneurs	Field survey, best practices	Number of networks	↗→↘	12.5%
F10	Satisfaction of Entrepreneurs in the Region	Support for satisfaction, development of traditions		Questionnaire on satisfaction	Trends in satisfaction	↗→↘	5.2%
F11	Entrepreneurial Spirit	Support for entrepreneurial traditions		National statistics	Trend evaluation	↗→↘	5.0%
Total weight – pillar III							22.7%

Source: Own elaboration.

On the other hand, this supporting network creates only 22.7% of the final effect on new business creation, networking and clusters. A limitation of that evaluation could be seen in factor loadings and the number of factors extracted from explanatory factor analysis, obtained from regional or provincial primary data.

4. Discussion

The system of indicators for the evaluation of the business environment presented above offers inspiration for regions that have suffered from sectoral change: they should be able to evaluate the potential of their business environment and their resources to support entrepreneurial activity at the local level to support regional growth. Our study also offers some implications for managerial decision making. First, our models demonstrate the effectiveness of entrepreneurial systems on both national and regional levels, as well as strategies for obtaining a competitive advantage in delivering business performance. Therefore, building and integrating innovation strategies and capabilities in line with green innovations and ecological investments would help to change the conditions of the business environment. Secondly, increasing problems with depopulation or the number of researchers in both regions would be motivation for supporting start-up companies led by young people in their quest to seize market niches. **It was confirmed that regional trends do not follow the results of evaluation on a national level (to answer RQ1, see section 3.1), and regional policy is focused on regional weaknesses, which was supported by an impact matrix analysis (RQ2; section 3.1 and case study 3.2)**

From the point of view of sustainability with regard to model enterprises in the Moravian-Silesian Region, the important inter-district issues are employee numbers

and capital combination, with equity having the prevailing influence. The greatest obstacle to start-ups is a lack of alternative financing and qualified employees. The significant factors in terms of information flows appear to be the use of the regional website, monitoring of subsidy policies and taking advantage of energy-saving projects. Therefore, one may conclude that the enterprises in the regions researched have diverse requirements, varying expectations and different experiences precisely because of the abovementioned criteria. These factors will play an important role in the evaluation of the sustainability of entrepreneurship in the selected region within the territory of Czechia.

Another important element is the analysis of the regions facing depopulation, which is also a problem in the Moravian-Silesian Region. On this issue, one may find the study by Delfman et al. (2014), which was conducted in the Netherlands at the municipality level (418 municipalities) in regions with recorded depopulation, useful. The study confirmed that the economic impact of newly established enterprises on the region was not fully corroborated. A significant finding appeared to be the diversity of urban and rural areas of the region and the importance of local politics in supporting businesses. Similarly, the enterprises in these depopulating areas do not benefit from the indirect effect of increased labour productivity and innovation until they have existed for approximately eight to 10 years. In our case, the most productive companies are at least 15 years old; thus, in structurally changed regions, productivity is postponed. Suggested manual expands a previously published work of Ruan et al., (2020), who analysed province of China. Their study designed a system of indicator evaluation in a graphic way, including indicators from economy, natural resources, ecology investments. The manual in our

paper expands this work adding indicators of business activity, which could improve local economy as well.

Conclusions

As demonstrated in the case of the Moravian-Silesian Region, most indicators – such as changes and adaptation to industrial structure – behave similarly (Xuesong, 2018; Efrat et al., 2018; Colombo et al., 2019). On the other hand, productivity and innovativeness (Delfman et al., 2014) are postponed due to regional structural changes, which are not covered in the KOF and Doing Business indicators. Most entrepreneurs have their own experience in the chosen industry, and they continue to build on this in their independent businesses. They cited local conditions for entrepreneurship, including a sufficiently large labour force and financing resources (as was also identified in the research on the Moravian-Silesian Region) as important factors in the regional development of entrepreneurship. In their opinion, other essential factors in development are monitoring the size of the enterprise at its foundation, the proportion of self-employed people in the total entrepreneurial population, and the knowledge base as measured by education and the share of scientific and research workers in the small and medium-sized enterprise sector. They arrived at the crucial conclusion that the development of the region does not necessarily have to depend on an increase in the number of new economic entities because, in regions with several thriving large businesses, it is very difficult to cultivate the entrepreneurial spirit in the small and medium-sized enterprise sector – including in Shanxi province, where mutual cooperation and assistance is needed and supported, which is in line with the study by Zhao et al., (2018).

Thus, a more detailed examination of barriers is needed. The proposed model,

based on the study results presented here, could serve as supporting material for the evaluation of the local business environment. The existence of regional entrepreneurship sub-environments is one theoretically plausible explanation for spatial variations in entrepreneurship activity within districts as was demonstrated within a national and regional context (Moreira Carrizo et al., 2018). Field research in various regions is needed to compare the previous findings in the area of relationships between levels of satisfaction of small businesses and factors which have an influence on sustainable business (Popescu and Banța, 2019; Kanie et al, 2019). The regional business environment represents supportive infrastructure for entrepreneurship such as entrepreneurship-friendly laws and regulations in the area of establishing a business, the existence of supporting services for business founders as well as for established firms. The benefit of this case study was its demonstration of the importance of regional-based studies in cooperation with local governments as presented in form of a manual.

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Appendix A: Macroeconomic indicators for Shanxi province 2013-2019

Macroeconomic impacts (GDP contribution and other macroeconomic indicators)								
		2013	2014	2015	2016	2017	2018	2019
GDP growth	%	9.0	4.9	3.0	4.5	7.1	6.7	6.2
Disposable income of private households	%	11.49	9.38	7.95	6.69	7.20	7.69	8.36
Socioeconomic impacts and linkages (education, employment)								
Wages and Salaries	%	12.4	2.8	2.9	0.8	11.1	9.6	-
Employment rate	%	6.4	-2.6	-2.6	-2.2	-0.4	-0.7	-
Unemployment rate	%	3.1	3.4	3.5	3.52	3.4	3.3	2.7
Tertiary educational attainment in the 25-64 age group	%	4.9	-0.7	3.9	-4.6	-0.2	-0.9	-
Business units	%	-	-	42.2	38.4	27.6	-	-
Community impacts (changes in settlement, social structure)								
Population growth	%	0.53	0.50	0.44	0.49	0.54	0.43	0.30
People at risk of poverty or social exclusion	%	-16.71	-10.03	-17.10	-16.59	-28.49	-46.62	-
Total patents - inventors	%	14.68	1.23	-8.09	48.34	-3.31	27.32	-10.30
Researchers	%	2.80	0.04	-10.64	3.94	13.80	-2.92	-
Environmental impacts								
Population connected to wastewater collection and treatment systems	%	-5.59	17.19	17.86	6.54	0.47	-	-
Environmental protection expenditure	%	11.33	-2.95	4.41	16.17	11.54	32.14	

Source: Shanxi statistical yearbook.

Appendix B: Macroeconomic indicators for Moravian Silesian region 2013-2019

Macroeconomic impacts (GDP contribution and other macroeconomic indicators)									
		2012	2013	2014	2015	2016	2017	2018	2019
GDP growth	%	99.5	95.7	102.4	103.2	102.5	102.8	102.8	106.2
Disposable income of private households	%	85.1	82.7	75.7	85.8	72.7	71.4		
Socioeconomic impacts and linkages (education, employment)									
Wages and Salaries	CZK	24 340	24 397	24 667	25 475	26 555	27 991	30 364	32 845
Employment rate	%	54.5	52.1	53.2	57.9	59.3	59.4	59.8	59.0
Unemployment rate	%	9.5	9.9	8.6	8.56	7.45	5.77	4.65	4.44
Tertiary educational attainment in the 25-64 age group	thous.	135.6	152.1	146.1	159.2	168.2	178.4	175.9	
Business units		244 742	248 500	250 028	250 213	251 898	254 525	256 871	255 042
Community impacts (changes in settlement, social structure, migration)									
Population growth	%	-3.3	-3.9	-3.4	-3.6	-2.8	-3.3	-2.1	-2.3
People at risk of poverty or social exclusion	%	9.6	8.6	9.7	9.7	9.7	9.1		

Total patents - inventors		34	30	52	54	80	63	51	
Researchers		2 621	1 947	2 135	2 444	2 556	2 701	2 877	
Environmental impacts									
Population connected to wastewater collection and treatment systems	%	82.3	82.6	83.2	83.3	83.8	82.8	83.1	83
Environmental protection expenditure	CZK	3 575 114	4 498 850	5 754 797	6 715 810	3 617 653	3 272 598	4 743 591	