Construction Production as a Key Indicator of the Territorial Development

Lucie Vankova¹, Gabriela Kocourkova¹, Zdenek Krejza¹

¹Brno University of Technology, Faculty of Civil Engineering, Veveri 331/95, 602 00 Brno, Czech Republic

Abstract. Balanced territorial development is essential for the long-term sustainable competitiveness of the region. There is a tendency to make use of the strengths of the region and fully develop its potential. The competitiveness of the region depends on its economic level and, vice versa, the economic level of the region is based on its competitiveness. There are significant differences between the regions in the Czech Republic. Differences between the developed and less developed regions have been constantly increasing. There are indicators that are monitored at a certain level of quality and time horizon to determine these differences. These indicators can be the indicators of the national economy, however, also indicators for monitoring differences in construction industry. Industry represents a significant sector of the economy of the Czech Republic, representing 35% of the Czech economy and employing more than 40% of the economically active population. One of the pillars of the Czech industry is represented by construction industry. The research presented in the article deals with the issue of the territorial development in relation to the construction production. The aim of the research is to use analysis of the regions of the Czech Republic to identify those with the potential for the future development in the construction production. The regions were compared with each other within the period 1998–2016 in terms of the national economy and construction industry indicators. When comparing these indicators, some dependence can be seen. In most of the cases, GDP grows with the rise in construction production. In some regions, construction production had a larger share on the changes in GDP and in other regions, smaller. The GDP dynamics in individual regions was different in individual regions. Differences in the pace resulted in the fact that some regions achieved better results than the national average. In other regions the pace was slower and their development was lagging behind the national results. The size and location of the regions within the Czech Republic also have an impact on the value of these indicators. The research results show that all regions have the potential for future development. However, for some of them, this development will take place more slowly and on a smaller scale than in the others.

1. Introduction

Balanced development represents a condition for the long-term sustainable competitiveness of the region. Competitiveness is characterized by an effort to fully exploit the potential that is embedded in the region and thereby enable subsequent development. Competitiveness of the region can be determined either by qualitative and quantitative description of the sources of competitiveness or by measuring the factors of competitiveness, i.e. by measuring the aggregate indicators [1]. Competitiveness of the region leads to better quality of life and increase in the living standards in the region [2].
Regional development is a complex of processes which take place in a geographically defined area, and which are related to the continuous improvement in the social, cultural, economic and environmental potential of a given territory, thereby increasing its competitiveness. [3] The main objectives of the regional development include strengthening the competitive position of the territorial unit, improving the local business environment, searching for sales opportunities for locally provided products and services, increasing employment and long-term career opportunities for local inhabitants as well as improving the quality of life of the population. [4] When considering the development of the territory, it is necessary to take into account the infrastructure level of the municipalities, especially the functioning of the network of water supply, sewerage systems and sufficient coverage by the Internet network. Inter-municipal cooperation can also help to develop these networks [5]. All these lead to differences or imbalance in individual regions, referred to as disparities.

Regional disparity represents the difference or inequality of signs, phenomena or processes that have a totally explicit location and that occur in at least two entities of the respective territorial structure. As it is evident from this definition, regional disparities are differences that result from the natural development of a realistically functioning economy. It can therefore be said that this group logically includes primarily interregional disparities, which are considered completely undesirable from the point of view of individual economic policy makers, and which are subsequently reflected in the efforts to mitigate or eliminate them completely. Disparities can be viewed on the basis of regional analyses in two ways, either as weaknesses, referred to as negative disparities, or strengths, referred to as positive disparities.

Negative regional disparities form the basis of traditional EU regional and cohesion policy. It is based on the solidarity principle, where less developed regions are facilitated to get more equitable income or distribution of employment, i.e. on the solidarity of more developed regions with less developed regions. The motives are therefore mostly political. Thus conceived regional policy aims at reducing the disparities in the area of interest and at the same time at making effective use of the diversified space development or growth potential. In order to successfully implement this regional policy, it is necessary to determine suitable indicators to identify regional disparities [6].

The role of positive regional disparities lies in the understanding that disparity can represent an engine of development and a source of comparative advantage. Thus, regional policy focuses on exploiting the chances aiming at improving people's quality of life as a result of development. One of the reasons for using strategic planning in territorial development is the possibility to address the socio-economic development of the territory in a comprehensive and effective way. The aim is to induce a change, mobilize local actors and encourage their active approach to the development of the territory in which they live or operate in today's highly competitive environment.

2. Regional development indicators
There are significant differences between the regions in the Czech Republic. There are some indicators that are observed at a certain quality and time horizon to monitor these differences. These indicators may be a regional gross domestic product, average wage amount or unemployment level. They can be also represented by indicators such as regional GDP per capita at constant prices, unemployment rate, and average gross monthly wage. [3] Indicators such as construction production, building permits granted minimum wage or number of construction companies are monitored for recording differences in the construction industry [7].

2.1. GDP
Gross domestic product is a key indicator reflecting the performance of economy. Regional gross domestic product is an indicator of economic performance of a given territory. The indicator shows the total value of goods produced and services provided by persons employed in the region. However, the result is related to the population of the region and its standard of living to a small extent. The predicative
ability of the regional GDP is significantly influenced by people commuting to work to other regions or employment of foreigners without residency status [8].

GDP can be determined on the basis of several methods: expenditure, income or output approach. The production approach is mainly used for regional gross domestic product. The principle of the production approach is added value. It is the value that individual producers add to the value of purchased raw materials, semi-finished products and services during the manufacturing process [9].

\[ \text{GDP} = \text{gross added value} + \text{product tax} - \text{subsidies on products} \] (1)

Gross domestic product is created as the sum of gross added value and product tax, from which subsidies on products are deducted. To calculate gross added value, intermediate consumption has to be deducted from the total value of production [10].

2.2. Construction industry

Construction is a sector that provides construction work, maintenance, modernization, reconstruction and demolition of building structures. The main goal is to create a suitable working and living environment for the existence of people, animals and plants while maximizing the preservation of all natural and cultural monuments. The construction industry therefore represents a complex field of human activity, which includes not only technical, technological and economic, but also aesthetic and ecological components in itself [11] [12].

Construction is one of the main pillars of the Czech economy, as shown in Figure 1.

![Figure 1. Economics entities according to their prevailing activity the year 2016](image)

3. Methodology

Many methods are used to compare regions. The point method which processes specific statistical data and subsequently allows to convert them into a user-friendly table or chart was chosen as the most suitable method for carrying out the required analysis. The method was chosen based on the relatively good explanatory ability and not high computational demandingness at the same time. The point method works on the principle of searching for a region which achieved the maximum or minimum values [13].
Figure 2. GDP in regions development during the 1998 – 2016 period

Figure 2 shows development of the GDP in individual regions of the Czech Republic from 1998 to 2016. The figure 2 shows not only the obvious growth, but also the drop in performance reflecting the financial crisis in 2009. The tendency of economic development is similar in all regions.

In the Czech Republic, as well as in other economically advanced countries, construction industry represents one of the main pillars providing economic development. In the long-term horizon, construction industry and related investment constructions contribute to the balanced development of the area, including environmental impacts, creating conditions for doing business in other economic fields and sectors and maintaining social stability, etc. The development of the construction industry follows the economic cycle with a certain time delay and has long-time momentum. Thanks to its high multiplier effect, it contributes significantly to the growth or decline of the economy [14].

In 2008, the Czech Republic was hit by the global economic crisis which gradually manifested itself in the national economy and thus in the construction industry. The manifestations of this crisis in the national economy could be seen on GDP in the construction industry on construction production. In some regions, the crisis manifested itself to a greater extent and faster, however, in other regions to less extent and slower.
Figure 3. Construction production in regions development during the 1998 – 2016 period

Figure 3 shows the development of the construction production in individual regions of the Czech Republic in the period from 1998 to 2016. The graph shows the growth up to 2008, but the drop in the financial crisis follows. Construction industry tends to be the first affected sector in the crisis period, and vice versa. Improvement in outcomes of construction industry indicates improvement of the entire economy of the country. From a regional perspective, the dynamics of construction production is intensive, the financial crisis in 2009 caused a drop in construction production in all regions, most notably in the Prague, but also in other regions this fall can be noted.

4. Design of regional development strategy for the construction industry

Declining construction production can be addressed in strategies for the development of construction industry in individual regions, for example by focusing the region on acquiring investors, who will not mind activities with low added value or on the support of brownfield revitalization and investments in development areas. Another priority in the strategy can apply at the support for rural regions by complementing the missing infrastructure, connecting municipalities to the sewerage system and the overall increase in the standard of living in these areas. Regions that have been most affected by falling construction production since 1998 have been Karlovy Vary, Olomouc and Central Bohemia regions.

In the regions with a significant decline in the number of construction companies, the construction development strategy should focus on improving business conditions, for example by encouraging entrepreneurship through the provision of preferential regional investment and operating bank loans for SMEs or by better promotion of business premises and buildings and their subsequent offer to potential investors. The biggest decline in construction companies in the period under research was in the Karlovy Vary, Liberec and Olomouc regions.

The problem of regions with staff decline in the construction sector can be addressed within the construction development strategy by motivating potential employees, such as by support in the area of education, by motivating young people for apprenticeship studies such as bricklayer, roofer, carpenter or plumber, by improving collaboration between construction companies and employers and schools and better interconnection of the education with the needs of practice. Another area of the strategy focuses both on attracting new employees and keeping the existing ones. This area represents the availability of housing and this priority can also deal with the adaptation of suitable buildings to flats, the construction of "starter" flats or by preparation of new building plots. Another priority may be the...
increase in gross average wages and ensuring their adequate growth. The most significant drop in employees since 1998 was recorded in the Liberec, Hradec Králové and Karlovy Vary regions.

Many problematic areas in the construction sector are interrelated and improvement in one area leads at the same time to improvement in the other.

Financing these priorities in the construction development strategy is possible from various sources and their combinations. These sources could be EU subsidies, regional budgets, regional development programmes of the Ministry for Regional Development, town, municipality or micro-regional budgets as well as private sector resources.

Municipalities in the Czech Republic manage the municipal budget and thus have the opportunity to implement development strategies in the municipality and to invest funds in the improvement of the life quality in the municipality. Public budgets provide resources to municipal budgets, however, after the Czech Republic joined the European Union, the most widespread source of funding for public projects has been subsidies that focus on specific areas. In many cases, however, the municipality itself does not have sufficient resources to support the operation and development of its technical infrastructure and does not have the possibility to apply for subsidies. Therefore, the municipalities associate into micro-regions. There are more than 550 microregions in the Czech Republic, i.e. unions of municipalities that have a common goal. Microregions represent one of the ways of inter-municipal cooperation through which support can be provided to member municipalities. Co-financing has benefits in particular in terms of savings, combining funds to co-finance projects, co-applying for grants, etc. Funding can be dealt with in two ways, either from members' own resources or from other public and private sources (e.g. subsidies) [15].

5. Results and discussions
When comparing GDP and construction production indicators, certain dependence can be seen. Most of the time, GDP grows with the rise in construction production. In some regions, construction production has a larger share on the changes in GDP than in other regions. The size and location of the regions within the Czech Republic also have an impact on the value of these indicators.

| GDP [mil. CZK] | 2016   | Rank | Construction activities [mil. CZK] | 2016 | Rank |
|---------------|--------|------|-----------------------------------|------|------|
| Capital city of Prague | 1,193,240 | 1.  | Capital city of Prague | 55,315 | 1.  |
| Central Bohemian Region | 552,470 | 2.  | South Moravian region | 25,753 | 2.  |
| South Moravian region | 513,666 | 3.  | Central Bohemian Region | 22,352 | 3.  |
| Moravian Silesian Region | 466,702 | 4.  | Moravian Silesian Region | 20,888 | 4.  |
| Ústí nad Labem Region | 274,254 | 5.  | South Bohemian Region | 17,631 | 5.  |
| Plzeň Region | 243,908 | 6.  | Ústí nad Labem Region | 15,354 | 6.  |
| South Bohemian Region | 238,620 | 7.  | Plzeň Region | 13,313 | 7.  |
| Zlín Region | 228,601 | 8.  | Olomouc Region | 11,545 | 8.  |
| Hradec Králové Region | 221,053 | 9.  | Pardubice Region | 11,168 | 9.  |
| Olomouc Region | 219,892 | 10. | Vysočina Region | 11,128 | 10. |
| Vysočina Region | 190,141 | 11. | Hradec Králové Region | 9,932 | 11. |
| Pardubice Region | 186,151 | 12. | Zlín Region | 8,770 | 12. |
| Liberec Region | 155,081 | 13. | Liberec Region | 7,943 | 13. |
| Karlovy Vary Region | 89,461 | 14. | Karlovy Vary Region | 4,636 | 14. |

All regions in the Czech Republic have the potential to develop construction production according to the evaluated indicators in the construction industry, as shown table 1. However, the difference is in
the speed and scale with which the regions develop. Within the evaluated indicators, the largest values were reached for the capital city of Prague, which in the vast majority of cases, significantly exceeds the average values in the Czech Republic and thus influences the values in individual regions. If Prague was excluded from the evaluation, the differences between other regions would become more apparent.

Within regions with faster development in construction production according to the evaluated indicators, regions where the faster and greater development of the evaluated indicators can be seen in the long term and their faster reaction to changes on the market can be observed, could be placed. This may be due to the larger size of the regions, better financial possibilities of the regions and potential for greater attention from different ministries.

Construction production in the regions which experience greater differences in compared indicators in the construction sector over the period under review and which reaction to coping with changes on the market take longer, will continue to develop more slowly and on a smaller scale.

6. Conclusions
From the perspective of the national economy, regions were compared according to the gross domestic product. Prague has the highest GDP in the long-term horizon. Other regions with high GDP include Central Bohemia, South Moravia and Moravian-Silesian regions. On the other hand, the lowest GDP in a long-term horizon is in Karlovy Vary region. In the long run, the economic crisis has manifested itself in most regions from 2008 to 2010, resulting in a decline, however, the growth can still largely be seen in all regions.

The research results show that all regions have the potential for future development. For some, however, this development will take place more slowly and on a smaller scale than in the others. Prague, Central Bohemia, South Moravia and Moravia-Silesia regions have the potential for faster and more significant development. Conversely, the slower development can be expected in the Karlovy Vary, Liberec and Ústí nad Labem regions.

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