

## REGIONAL COMPETITIVENESS AND ANALYSIS OF ITS FACTORS

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### **Abstract:**

In the context of the set objectives of European Union, competitiveness is considered as one of the most important indicators of economic success of areas. Factors that have influence on the competitiveness form a complex system of interrelated elements. This paper will define the most important factors and it will depict their impact on competitiveness by using dynamic model.

### **Introduction**

Competitiveness or ability to succeed in the competition with other subjects is not a narrowly defined phenomenon, which could be measured with one indicator and which could be viewed from just one angle. It is a sum of mutually interconnected quantitative and qualitative indicators, which are used to evaluate the development of an area and its position among other compared areas. The resulting competitive ability of a defined area is determined by economic, social and political factors and relations among them. The effect of these factors creates an environment for lives of people and activities of companies.

With regard to the increasing emphasis, which is given to the role of regions for the economic development of a state, both entire states and their individual regions are evaluated from the perspective of competitiveness. The aim of this article is to use the system dynamics, in order to compile a model of competitiveness of a selected region of the Czech Republic, and to use the simulation analysis to outline potential impacts of changes of selected indicators on the competitive ability of the region in the next five years. The region will be defined at the level of higher territorial self-governing units and the simulation analysis will be performed on the basis of data available from 2010 – 2014.

### **1. Theoretical Definitions of Competitiveness**

The requirement of competitiveness or an ability to assert oneself among others is a criterion, which has been used as a criterion to evaluate both nations and regions

increasingly more often. As this is a very frequently used term, there is no clear and generally accepted definition. The reason for this is that the concept of competitive ability in relation to a territory was taken over from the corporate sphere, where competitiveness can be clearly defined and its absolute or relative form can be distinguished. A company with an absolute competitive ability is the company, which is successful in the market. The relative definition is based on the comparison of companies, so it is an ability of a company to provide products and services at the same or higher level of efficiency than its competitors. (Hančlová, 2010) However, to define competitiveness in relation to a territory, we need a more complex approach. A manifestation of competitiveness is often perceived as economic performance, which can be viewed from many angles and explained by means of many different scientific fields. (Wokoun, 2010) This is why this concept is so hard to define. The committee of the European Union, in the Sixth Report about Social and Economic Situation and Development of Regions in EU from 1999, defines the competitive ability at the national level as “the ability to produce products and services, which comply with conditions of international markets and at the same time to achieve high and sustainable revenues...” (Maouqué et. al., 1999; in Hančlová, 2010) According to (Wokoun, 2008), the competitive ability is defined as a measure of a long-term success of companies or states, regions, cities and municipalities.

The above-mentioned definitions of competitive ability on the macroeconomic level follow from the assumption that the territory (states, lower territorial self-governing units) can compete among each other. However, this assumption is refused by e.g. (P. Krugman, 1994), who condemns the use of the term competitive ability at the macroeconomic level claiming that states or other territorial units are no companies and they work on other principles than profitability or necessity to maintain a market share. He adds that an insufficient development of states at the macroeconomic level does not lead to their dissolution, as normally happens with companies, where an unsuccessful company is excluded from the market by the market mechanism.

### *1.1. Regional Competitive Ability*

As regards the increasing importance of regions and their economic growth, which is considered a drive of the economic development of a nation by experts, competitiveness is usually defined both at the national and regional level. As Wokoun (2010) says about regions, that is lower territorial self-governing units, they compete with each other within one state by means of their attractiveness of the business environment, human resources and capital. Therefore, he defines regional competitiveness as a sum of synergies and complementarities, which occur within business and other socioeconomic activities developed within the given region. The regional competitive ability is on the border between the microeconomic and macroeconomic competitive ability, so we can view the regional competitiveness from two perspectives as well – microeconomic and macroeconomic. The microeconomic concept of regional competitiveness is based on

the fact that in any region there are companies, which produce products in compliance with requirements of the regional market. Nevertheless, when compared with companies, competitiveness of a region is given by other objectives than just efforts to reach a maximum profit. (Tvrdň & Šurenová, 2007) The macroeconomic concept is based on the fact the region should be able to ensure such conditions, which attract new companies, ensure a stable or growing standard to all subjects. (Storper, 1997) However, the macroeconomic approach cannot be fully applied at the regional level, there are many tools, which cannot be used at the regional level, e.g. exchange rate differences or price policy.

### *1.2. Factors of Regional Competitive Ability*

Regional competitiveness depends on a series of mutually interconnected factors, which reflect working of the economy of the given territory. Even classic economists already dealt with defining the competitive ability at the national level. According to their theory, the source of competitiveness was specialisation in the form of labour division, which brought economies of scale and the possibility of international trade and business with products, where one country applies an absolute advantage against another during a production of such products. (Kubicová et al., 2010) The new approach to the theory of defining of main factors of competitiveness was brought by Porter (1990), who compiled the model of the diamond of the competitive ability, by means of which he defined the basic determinants, which included: factors generated by the demand, factors degenerated by presence of affiliated sectors, factors generated by strategies and character of competitiveness of companies, factors of government and factors of coincidence. Sources of competitive advantage are factors, which create a favourable environment for the existence and activities of companies and lives of people. According to Berman Group (2006), the most important factors include human resources, research and development, economic infrastructure, direct foreign investments, transport and telecommunication infrastructure. It is a multidimensional problem, which results in an ambiguity in approaches towards defining the basic factors and manners of their evaluation. This also follows from the fact that mere cost reduction cannot guarantee a competitive advantage of a region in the consequence of a rapid technological development, modernisation of information technologies and decrease in transportation costs. What is necessary is to focus our attention on creation and use of new knowledge, innovations, human resources quality and mutual cooperation of individual components of the society. (Dunning, 2000)

Definition of competitiveness factors plays an important role for their subsequent evaluation. World organisations such as World Economic Forum, International Institute for Management Development use disaggregation of summarised macroeconomic indicators to evaluate the competitive ability. The Czech yearbook of competitiveness follows a long-term development of economic indicators.

## 2. Analysis of Factors of Regional Competitiveness

The analysis of competitiveness factors will be performed by means of the model of system dynamics. The system dynamics is one of the tools suitable for the analysis of behaviour of a system and its development in time. It is an approach, which takes into account relations between individual elements, feedback and time delay. The object of system dynamics is to create models, where a model is a reflection of the real world.

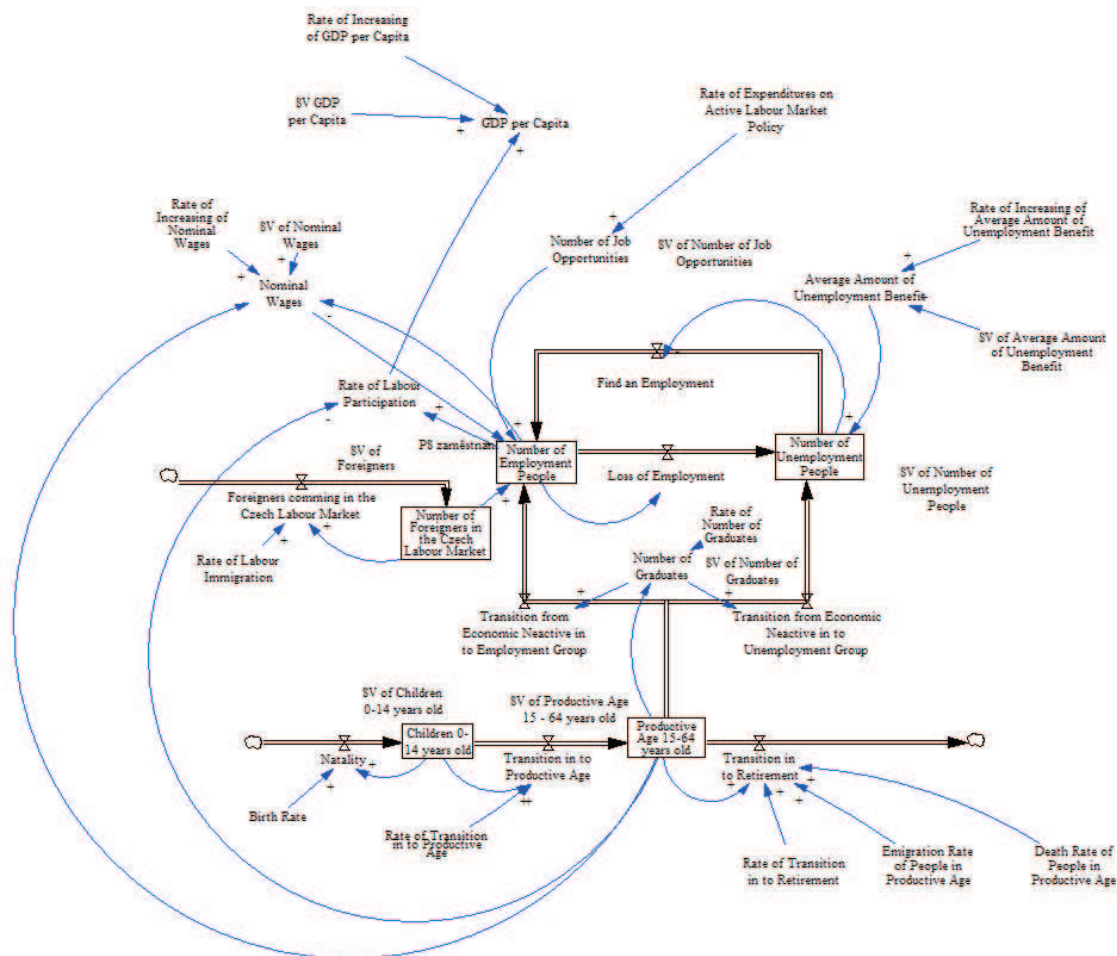
The System Dynamics approach is based on the assumption that the real environment can be captured as a system; i.e., as a set of elements and relationships between them. This is not a single process with a fixed start and end; it is a continuous reaction between components of the system, showing also feedback. According to Burianová (2007), a dynamic system is “a set of interrelated elements whose values evolve over time and affect each other”. The system dynamics is based on system thinking. As Vojtko and Mildeová (2007) claim, system thinking is a specific way of viewing the world, which attempts to respect and surpass limits of everyday thinking, which can be given by nature, education, upbringing.

In this paper, a model will be compiled on the basis of a state and flow diagram that graphically illustrates the interconnection of individual elements of the system and records all the variables that enter into the modelling. In the modelling itself, the state and flow diagram is supplemented by quantifying expressions where relations between elements are recorded by a system of nonlinear differential equations. The model will be created with the computer program Vensim. The analysis will be based on known data for the past five years, and subsequently a simulation analysis will predict possible development in the following five years.

Factors of competitiveness, which enter the model, are based on the study of Martin and his hat model of factors of regional competitiveness, where individual factors of the regional competitive ability are divided into three main areas – factors affecting the production factor, factors affecting the capital and productivity. As the entire issue is very complex and extensive, only a partial area of the entire system will be modelled: the area concerning labour and its effect on the competitive ability. The level of regional competitive ability will be expressed in the indicator GDP per capita.

The chart of statuses and flows, according to which the model of competitive ability was created, is illustrated on the picture no. 1. The model is created on the basis of a natural process of ageing of the population and transition of people from the pre-productive age into the group of economic active inhabitants, who enter the labour market and thus represent the available amount of work of the given region. It is a model, which captures potential factors affecting the competitive ability of the region in the area of labour, is abstracted from the external environment and so it represents a simplified reality.

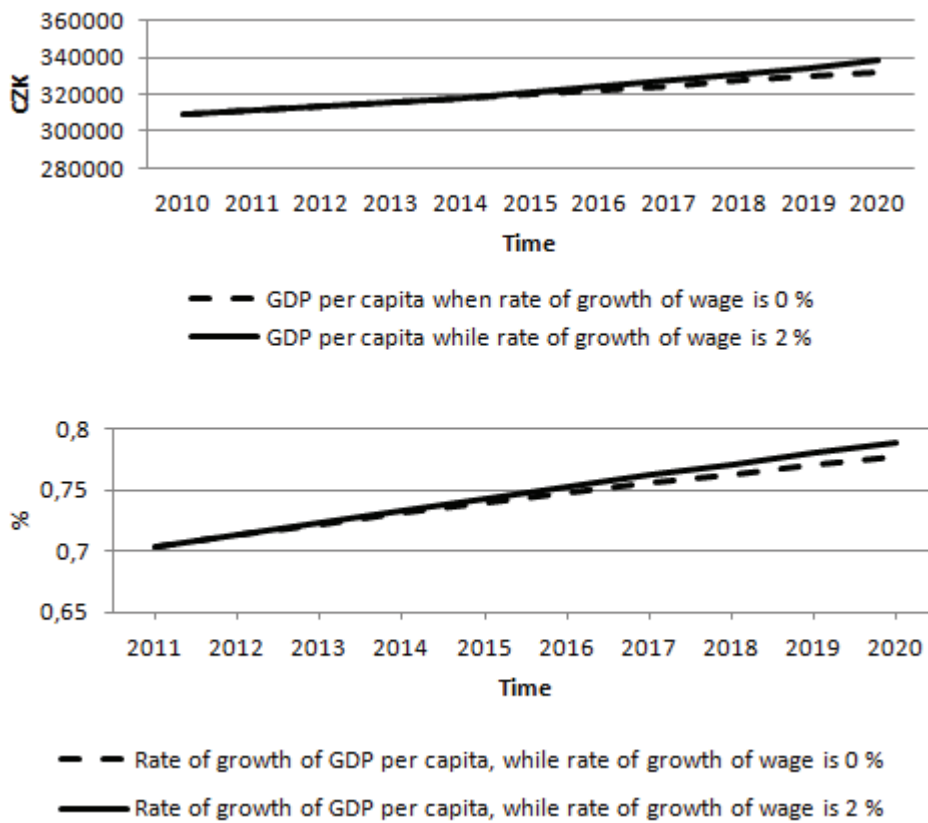
FIG. 1: Model of the Competitive Ability of the Region – labour market



Source: own processing

The Pardubice Region, which shows a relatively low unemployment rate in comparison with other regions and where there is enough available job positions, was the region chosen for the following simulation analysis of the development of the regional competitiveness within the context of changes in the development of active indicators. This means that this particular labour market is not affected by the unfavourable trend of its main indicators. With regard to the factors, which enter into the model, the impact of the wage increase on the competitive ability of the region will be modelled in the following part. The competitive ability is manifested by means of the GDP indicator per capita. According to predictions of economic experts, we can expect an increase in both nominal and real wages of inhabitants. The anticipated increase in nominal wages in the Pardubice Region should be around 2.1 % (ČSU). The impact of the increase in wages on the complete ability is illustrated on the following picture no. 2. When we compare the charts, it is obvious that the annual increase of wages by 2% could lead to an increase of GDP per capita. The increase is less than 2% but we can see here a positive influence of the given factor on the economic development of the country.

**FIG. 2: The effect of the nominal wage growth change on the GDP per capita**



Source: own processing

**Conclusion**

The level of competitiveness of the region is an important indicator of the economic, social and political environment in the region. The result value is determined by many factors, which are complementary and mutually dependent. Although it is a current topic, generally accepted definition of competitiveness or of the factors do not exist. The situation is given by many approaches and concepts of it. This paper dealt with the factors of regional competitiveness. Their effect on the competitiveness of the region was analysed by using system dynamics model. This tool can capture not only the effects of individual factors on the endpoint, but also their interactions and feedback. The aim of the paper was to analyse the factors of regional competitiveness and their impact on the development of the selected region. For the analysis was chosen Pardubice region and by given the magnitude of the issue only factors related with labour market were chosen. The simulation analysis of possible future development of competitiveness in Pardubice region was investigated in dependence on the development of wages in the area. In the next years, it can be expected positive relation between the variables. Rising wage growth should lead to increasing of GDP per capita with represented rate of competitiveness in the region.



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