

## Chapter 2.1

# Modeling of the Economic Development of a Region

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### ABSTRACT

*The economic development of a region depends on a number of factors which influence it mainly bases in a macro-economic aspect. Each region has its specific characteristics, thus area-surveyed indicators may not have sufficient predicative potential. In this chapter the authors design two new indicators (Index of Citizens' Financial Provision and Risk of Regional Economic Development) which enable them to evaluate the financial provision of citizens and the economic risk of a region in more detail. Consequently the authors can, through the course of designing these indicators, determine the rate of their influence on a region or at least predict their development. In order to create and model these indicators the authors used tools from the Microsoft Excel program. The methodology described can be widely utilized, as partial indicators can be substituted and, therefore, it is possible to evaluate other strategic factors of the region under consideration. Indicator Risk of Regional Economic Development was designed with the help of fuzzy sets. The chapter includes two case studies, which are based on official data provided by the Czech Statistical Office. The purpose was to illustrate the construction of indicators, their predicative value and modeling potential.*

### INTRODUCTION

The evaluation of the level of a region comes in reality from economic, social and environmental aspects. Individual countries have also strategic documents closely connected to this type of

evaluation, the Czech Republic is not an exception. Evaluation indicators are defined in relation to the Strategy of Regional Development in the Czech Republic and are assigned with information sources (the Strategy of Regional Development in the Czech Republic and appendices, 2009).

Considering the number of partial priorities and indicators designed to them, we find ourselves in

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a situation in which the evaluation of the level of a region is quite difficult. We are faced with the following questions:

- What is the position of the region with respect to other regions in the Czech Republic?
- Are there significant disparities?
- Which priorities should be given special care?
- What is the weight of individual evaluating indicators?
- and others.

Moreover, individual pillars of the Strategy of Sustainable Development contain other indicators delimited for regional observation which are used even in statistic surveys conducted by district statistic offices. Presently, 42 basic indicators are used at a regional level in the course of statistical research. Indicators were selected according to their relevance and data availability at a regional level (Czech Statistical Office, 2009), but in previous years different indicators were considered. This can lead to the distortion of the current situation of regions and to inaccurate conclusions of the conducted analyses.

One of the main tasks of this chapter is to find such indicators which are observed in long term periods, have sufficient predicative potential at a regional and country level and can be utilized for the economic evaluation of certain area. Another task is to design indicators which would help us assess the economic aspects of a region in greater detail and which could be modeled and predicated. It is therefore necessary to delimitate suitable tools and methods. In relation to this task we can state the third task, to demonstrate the usability of the design through case studies. The methodology process is elaborated so that a reader would be able to apply the obtained knowledge on various data, but also be able to modify it in the design of other indicators.

A proposal of new indicators based on the system concept, i.e., that the region is seen as a system characterized by a set of elements in mutual interaction and output function, is suggested. The purpose of the proposed criteria is supplemented by a set of indicators for the assessment of the region as a whole.

### **MACROECONOMIC INDICATORS USED IN ECONOMIC DEVELOPMENT EVALUATION**

The evaluation of the economic development of a country is possible by means of macroeconomic indicators and their trends. Macroeconomic balance characterized by such level of gross domestic product, which brings balance to aggregate supply and demand, is constantly being disturbed by destabilizing factors. In special literature (for example: Froyen, 2008; Baumol & Blinder, 1994; Parkin & Powell & Matthews, 2005; Shim & Siegel, 2005) the basic indicators are assumed to be the annual rate of growth of real domestic product, annual rate of unemployment, annual inflation rate and rate of balance of trade to nominal gross domestic product in percent. The maximal fulfillment of all indicators is in practice not possible, certain compromises can be achieved by fulfilling some of the goals at the cost of obtaining poor results of other goal(s). Baumol and Blinder (1994) paid great attention to the unemployment rate and inflation; the significance of these values is also stressed by Miles and Scott (2005).

Many important economists from various countries in various time periods occupy themselves with the analysis of macroeconomic indicators and the consequences of their development [e.g. USA: Carnes, Slifer (1992), Wilison & Clark (1993); post-communistic countries: Blanchard (1998); Great Britain: Layard & Nickell & Jackman (2005); Brazil: McEachern (2008)].

If we accent unemployment as a fundamental problem influencing country development, we

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