



# **Natural Science Readings**

**abstracts book  
(May 19-22, 2016, Bratislava)**



High School of Economics and Management (Bratislava, Slovakia)

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Nataliya Chernova,

MODELS OF SOCIO-ECONOMIC SAFETY ESTIMATION FOR POLITICO-  
ECONOMIC UNIONS

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In today's world the globalization processes continue to spread through countries, regions and continents. Most economic systems are characterized by high level of interaction processes. That is why socio-economic safety problem should be considered not only for each country separately but also for different politico-economic unions. Such unions are a good opportunity to solve both internal and external tasks of their members by combining resources. The participating countries retain their sovereignty, but give some of their powers to the union general authorities. One of the most significant examples of such unions is the EU. The EU is economic and political association of countries, aimed at their regional integration. One of the most crucial management tasks for the EU is to guarantee its socio-economic safety.

According to many scientists the definition of "socio-economic safety" may be formulated via definitions of its subsystems, such as economic, social, financial, demographic, political, recourse, ecological, information and many others. Each of them is described by some set of indicators. Hence to estimate the level of safety the initial dimension of the indicators set should be reduced. The most popular ways of solving such task is to form an integral indicator or to choose a representative indicator [1,2]. Integral indicator allows taking into account all safety

threats impacts and to range analyzed systems according to their level of safety. However, the level of impact of different indicators on the total level of safety can't be estimated. That is why our suggestion is to use a representative indicator. Such approach allows to reduce the initial number of indicators and to determine the level of impact of indicators, which are not chosen as representatives, on the general level of safety. Let's use GDP as representative indicator of socio-economic safety within this research.

The aim of the research is to form a set of models which estimate the impact of some key indicators on the representative indicator of socio-economic safety.

The suggested models are presented on the picture 1.

The first model is aimed to determine the initial set of indicators, which describe socio-economic safety of the EU. The second model selects the representative indicator. It may be based on experts' opinions or use more formalized procedures. The third model determines homogenous groups of countries within the union. It is based on cluster analysis procedures. The fourth model selects the most typical member of each group. It uses taxonomy methods. The aim of the fifth model is to estimate the level of impact of some initial indicators on the general level of safety. Its parameters are estimated for each key country and for the EU. To solve the model, correlation and regression analysis are used. The results obtained for each group and for the EU, should be compared. Such analysis may determine the level of uneven development within the union and particularities of economic systems of different groups of

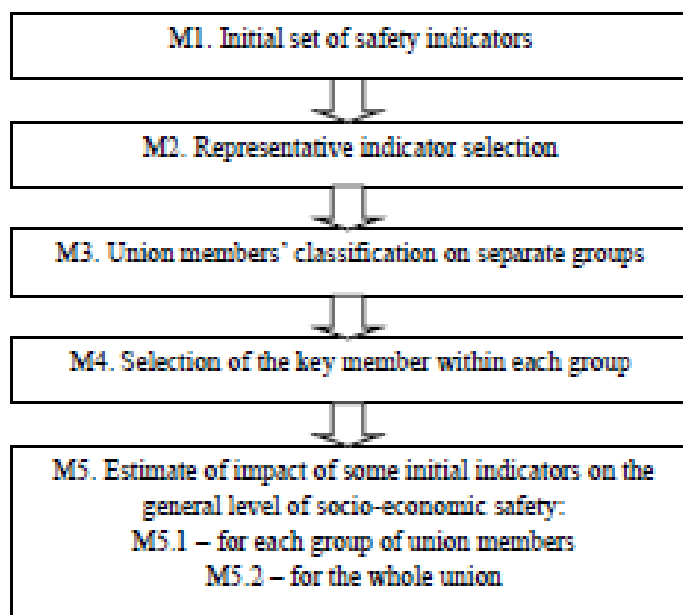
countries. To sum up, the proposed models solve the following tasks:

analyze the nature of the impact of individual factors on the general level of safety;

determine the most significant exogenous factors of impact within each homogenous group of countries and for the EU as a whole;

conduct comparative analysis of economics' structure for countries from different homogenous groups;

compare the nature and the level of impact of initial indicators on the general level of socio-economic safety for different homogenous groups;



*Figure 1. Socio-economic safety estimation models scheme*

for each homogenous group determine deviations of the impact level from the same for the EU as a whole.

The proposed models were approved within the research, which

was aimed to determine the level of impact of resource safety indicators on the GDP[3]. The following initial indicators were used: total investment, labor productivity, energy intensity of the economy, total R&D expenditure. As a result, five clusters of countries were determined. For each cluster the following model was estimated:

$$G = G(L, E, I)$$

G – gross domestic product; L – labor productivity, E – energy intensity of the economy; I – total investment. There was determined that the model's form and structure depends significantly on the cluster type. Obtained conclusions within each cluster may be spread on all member countries.

Andriets M.M., Moysyuk V.D, Moysyuk S.V.

#### PHYSICAL REHABILITATION OF THE STUDENT YOUTH

*Higher State Educational Establishment of Ukraine "Bukovinian State Medical University"*

Especially many problems arise in such a young, but very important area as physical rehabilitation. Specialists this sector have made significant progress in justifying action of physical factors on musculoskeletal system, creating new rehabilitation techniques. However, in modern rehabilitation of vertebral pathologies, there are some unresolved issues. Thus, the system of rehabilitation treatment of patients with clinical manifestations of these diseases requires improvement, not enough attention is paid to psychosomatic aspects of rehabilitation of patients with vertebral pathology, the common



