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# Impact of Globalization on Innovation project Risks Estimation

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***Abstract:***
*The impact of globalization on macro-economic processes is undisputable. However, it has an indirect impact on macro-economic processes, too. The current stage of the globalization development differs from the previous ones by the increased role and independence in managing innovative processes. It requires changes in approaches and methods of estimating the innovation project risks. The existing methods and ways to estimate risks of an innovation project do not allow defining the impact of globalization on its efficiency.*

*That is why there is a need to develop new approaches and methods that take into account the state of the market, and to apply new financial instruments and strategies. The work researches the impact of globalization on estimating risks of the innovation project. For this purpose the selection of a regulation type – an integrated corporate structure (ICS) to solve international problems, terms and conditions of forming it and stable functioning model were stipulated.*

*The research novelty is related to the stipulation of the hypothetic model of ICS and innovation project in the form of the system formed by using three interdependent systems: ICS system, risks system, and system of conditionally defined stages of implementation. It allowed revealing the impact of globalization on the estimation of the innovation project risks. The aggregate of these systems is a model of globalization (ICS) and the real innovation project.*

*In order to solve this task, we used the system approach to analyzing and estimating processes, the factorial analysis of many-stage processes, decision-making techniques, and the S. Pontriagin's analytical method. The research resulted in forming the model to estimate the ICS impact on risks of the innovation project.*

***Keywords****: globalization, innovation project, stability model, integrated corporate structure, risks, system optimization.*

***JEL Classification:*** *O10, D81, O22, O31*

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## Introduction

The distinguishing feature of the XXI century is the economically developed world-wide community that makes up a global system consisting of the combination of sub-systems: finances, investments (innovations), trading, etc. Economic processes of the globalization were analyzed in the works of Graz, J.C., (2010), Keohane, R., Ostrom, E. eds., (2005), Furubotn, E., Richter, R., (2005), Bevir, M., (2011). At the present time researchers are interested in the challenges occurred after the 2008 crisis and related to ensuring the development and economic growth stability. It is possible to specify the following basic challenges: non-stability of the global financial system that causes problems of the investment, raw materials markets and trading development, as well as ecological problems.

It is accepted that every industry involved in using resources and taking decisions has its own specificity. Particularly, there are various independent or interweaving systems of the international regulation with a different degree of control strictness. Nowadays there are several types of regulation to solve international problems as it has been explained in several works (Grigorev and Kudrin, 2013; Anikina *et al.*, 2016; Shatkovskaya *et al.*, 2017; Akopova and Przhedetskaya, 2016; Liapis *et al.*, 2013; Thalassinos and Liapis, 2014, Xanthopoulos, 2014).

The research considers only one type of regulating international problems for analyzing. According to the authors, it can estimate risks of the innovation project with the high degree of reliability. These are the integrated corporate structures (ICS) that fulfill strategic business purposes in the context of globalization. The goal of the research is to stipulate the impact of ICS that fulfill strategic purposes of business as a subject of market relations of globalization on estimating the innovation project risks.

In order to achieve the set goal, first of all, it is necessary to consider peculiarities of the formation and functioning of ICS, to define the efficiency and stability of their activity, and to form the economic and mathematical model of stable ICS functioning. Stable functioning of ICS has a positive impact on the efficiency of the innovation project because it allows to decrease project risks, and thereby to ensure a stable state of the innovation project defined by the method of limiting values of the factors affecting the efficiency.

## Theoretical Basis of the Research

### *Creation and Functioning of Integrated Corporate Structures*

ICS functioning is related to the comprehensive system of management and organization, problems caused by the job dissatisfaction and high indefiniteness of possible final results. The problems may cause the ICS decline at any stage of their formation and development. The majority of those who research ICS study

limited not interweaved causes of their decline (I.R. McNeal, N. Venkatraman, J.B. Hyde, B. Grey and H. Deleeuw, 2007). Other researchers have a rather descriptive nature and lack theoretical stipulation to show the results of empiric observations (B. Kogut, A. Park, R. Gulati, J.M. Gerindger, 2006). To manage the ICS stability means to manage problems related to forecasting, planning, and implementing.

Problems or their lack have an impact on the stability and efficiency of the ICS operation and its competitiveness. Top managers bear the main responsibility for all management processes in the ICS. Consequently, only directors and their key personnel define the ICS efficiency. The development of criteria in the ICS efficiency is based on the mutually voluntary integration and inclusion of all parties when forming the ICS. This case considers the integration that can attain its advantages within every corporation (Jeffrey, 2004). It is more reasonable to apply the criteria of estimating the ICS operation efficiency that takes into account social and economic indicators of every branch of the integrated structure. In accordance with it, in order to define the most important criteria of estimating the efficiency, it is necessary to apply the factorial analysis of multiple-staged processes.

The ICS efficiency criteria are estimated through important factors (criteria) that depend on the goals and conditions of forming the ICS. It is possible to divide the efficiency criteria into two classes: formal and substantial. The formal class of estimating criteria is found in international standards of the corporate social responsibility. This was a great achievement of the global community to establish the International Committee for Corporate Social Responsibility (Mohr and Spekman, 1994; Bashmakov *et al.*, 2015). Among other, this committee developed international standards IC CSR – 26000 – 2011 "Company Social Responsibility Requirements" (Lorange and Roos, 1993), and ISO 26000: 2010 "Guidance on Social Responsibility". Conscientious compliance with the standards provisions by corporations must lead to stable development of business (ISO 26000, IS., 2010).

However, it is known that not all businessmen are responsible (Law of the Russian Federation of 26.07.2006). The business form of the globalization, ICS, is comprehensive and multiple-staged in terms of managing the system (Florian and Galam, 2000). Its efficiency is defined not only by the formal class of criteria, but also by the substantial class. The substantial class contains four criteria that make up the unified complex of estimating the ICS efficiency: "Process Estimation", "Purpose Estimation", "Satisfaction Estimation", and "Result Estimation". These four criteria cover four variants of the unified complex of estimating the ICS efficiency in terms of globalization (Bernard and Pier, 2009; Lin and Germain, 1998) satisfaction with the ICS functioning, individual importance of results for every member corporation, achievement of the expected (planned) purpose of ICS foundation, and social and economic importance of the ICS operation results.

The work considers the construction of two basic models managing problems as a factor of ICS stability: the model of state that allows detecting and removing reasons of ICS decline in the problematic environment, and the model of forecasting variants of corporations' interrelation forms that cause stable development. To form and stipulate the models stability, the system approach, factorial analysis and decision-making techniques are used. Formation of the model of managing problems as a factor of ICS stability is the model of state. In order to form a generalized ICS stability model, we will consider it as the system of problems (behavioral, structural and psychological).

The state of ICS business relations can be expressed as cooperation or a competition, management structure (stiff or flexible), and purpose of the activity (short- or long-term). The conditions of the offered ICS stability model are as follows: ICS as a system will develop and modify if problems are not balanced but managed. Results of the ICS efficiency can be misread because criteria change when estimated. Some managers can estimate the efficiency by using the "social and economic importance of the ICS operation results" criterion, and some estimate it according to the "individual importance of results for every member company" criterion. It results in problems, and, as a consequence, the decrease in competitiveness or the ICS decline.

The criteria defined in the research are essential in terms of theory and practice for understanding the principles that make up the basis of the activity estimation made by ICS organizers and members. The model allows stipulating the result of the ICS activity: stable development, merger or acquisition, and decline. Sustainable development: the ICS stability will be inversely related to the difference between the level of cooperation and competition in the economic process. The ICS stability will be inversely related to the difference between the level of stiffness and flexibility of enterprises structures. The ICS will be inversely related to the difference between the level of short and long-term focus of the members conducting the economic activity.

*Merger and acquisition:* the ICS will move towards the merger or acquisition rather than decline when cooperation, stiffness and long-term focus dominate.

*Decline:* the ICS will move towards decline rather than merger or acquisition when competition, flexibility and short-term focus dominate.

*Unstable states of ICS:* levels of stiffness and cooperation (as well as flexibility and competition) will be positively interdependent when partners anticipate a short-term focus in the ICS. Under the high level of stiffness, cooperation and stiffness (as well as competition and flexibility) will be negatively interdependent when partners anticipate a long-term focus in the ICS.

The model allows choosing such forms of interrelation that will be more stable under certain conditions (character, time orientation, and interrelation structure). For example, if members focus on long-term, flexible and competitive interrelation, the most stable forms of ICS will be licensing and joint production, and innovation activity (Depamfilic, 2007; Menshchikova and Sayapin, 2016). Based on generalizing the results of a number of researches (J.F. Hennart, G. Bleak, D. Kent, S.H. Park, M.V. Russo, J.M. Pennings, H. Jamawaki, 2006) made over the recent decade in various countries, the following forms of corporations' interrelations are possible:

*Short-term competitive interrelations:* flexible interrelations – short contacts; stiff interrelations – joint researches and developments, and joint marketing.

*Long-term competitive interrelations:* flexible interrelations – licensing, joint production, innovation activity; stiff interrelations – joint enterprises, alliances related to purchasing a member's share.

Short-term corporate interrelations: flexible interrelations – subsidized researches, joint distribution, assembling; stiff interrelations – joint assembling, joint researches and developments, joint marketing.

*Long-term corporate interrelations:* flexible interrelations – local representativeness, franchising, licensing, joint production, innovation activity, providing resources on the long-term basis stiff interrelations – joint enterprises, alliances related to purchasing a member's share, subsidiaries.

The above formed model cannot be used to forecast business relations that cause their stable development before establishing the ICS.

It is possible to forecast the ICS operation that causes their stable development by using the mathematical apparatus: decision-making technique in multiple-staged processes. We will consider the formation of the economic and mathematical model of the ICS development related to the most promising forms of interrelation: long-term competitive interrelations and long-term cooperative interrelations. These two forms of interrelations are related to the innovation activity. The research stipulates the economic and mathematical model that allows estimating what impact the state of the ICS operation has on the innovation project risks.

## Theoretical Aspects of Managing of Innovative Project Risks

The integrity and cyclic nature of the global society development allow to consider the civilization, on the one part, as a process, and, on the other part, as a system being at a certain stage of development and consisting of an aggregate of subsystems, particularly, ICS. The peculiarities of innovation processes in the context of globalization are described in works of such researchers

as Farmer, N., 2013; Levén, P., Holmstrom *et al*., 2014; Sirgy *et al*., 2004; Dreher, A., 2006; Tsai, C., 2007; Nikolova, L., Rodionov, D., Gorovoj, A., 2016; Nikolova L., Rodionov, D.,. Kuporov, J, 2015; Tüzün *et al.* 2015; Vambery R.G. and Mayer P., 2012; Varma *et al* , 2007; Epifanova *et al.,* 2015; Stroeva *et al.*, 2015).

Assuming that the global community is a system, namely ICS, it is possible to say that it comprises all features of the system. It enables, in its turn, the authors to distinguish in this system a subsystem – investing, more exactly, investments in innovations, i.e. an innovation subsystem. The innovation subsystem is also a system. These grounds enable the authors to carry out operations with systems characterized by emergent and synergetic properties rather than separate objects.

It is possible to manage the innovation project risks by using economic and mathematical models of the innovation system. The economic and mathematical model allows to gain an insight into the phenomena under study and to have an impact on them as shown in several works (Marmier *et al.*, 2013; Marxt *et al.*, 2013; Mikkola, 2001; Moutinho, *et al.*, 2015; Stubbs and Cocklin, 2008; Schumpeter , 1939; Short *et al.*, 2012; Borowiec, 2013; Buyanov *et al*., 2002).

In the scientific work economic and mathematical models developed by S. Myers and D. Pogue (1997) are widely known. These are the Longer model of financial planning and the model of optimal allocation of capital resources of the company (the task related to rationing the capital). They are used in methods of analyzing sensibility and scenarios. The model of M.V. Gracheva (2011) has lately become popular. This is the optimization of integral external and internal risks expenditures that are also used in methods of analyzing sensibility and scenarios. It is possible to successfully apply the above mentioned economic and mathematical models to estimate risks and management of the innovation projects. However, none of them calculates limits of the factors that affect the efficiency of the innovation project in the context of globalization.

The work develops the model to calculate the limits of the factors that affect the efficiency of the innovation project. The authors call it a model of financial stability to manage risk factors of the innovation projects (hereinafter referred to as the stability model). The model aims at forming the area of the innovation project stability.

## Results

### Forming the Model of Stable ICS Functioning

Researchers were traditionally interested in stipulating the selection and results of using forms of corporations' interrelation. To a wide extent, the selection of the interrelation form is defined by its purpose that limits variants of relevant structures for selecting. For example, if the members' purpose is to acquire

the patented technology, then the relevant types of structures will include licensing, joint production, innovation activity and joint enterprise. If the purpose is to decrease risks and expenditures at the research and development stages, then the relevant structures will be joint researches and developments, including purchasing of share of one of the members. The association between the ICS purposes and system of problems is found in their interrelation because the interrelation structure is defined by purposes.

Long-term competitive interrelations and long-term cooperative interrelations cause stable development of ICS.

The problems occurring during the ICS operation are most often related to working out of perspective planning of the efficient activity.

The authors offer the following sequence of recommendations to create the decision-making model when forming the long-term competitive ICS in the context of globalization.

- It is necessary to describe the mathematical model of the selection situation.
- To analyze uncertainties, formalize the purpose, and for criteria and target functions.
- To solve occurring optimization and other mathematic tasks.

This sequence is rather conditional because all actions are closely interwoven in the process of solving a certain task.

Any research is known to start with forming the model of selection situation. In order to do it, it is necessary to deeply understand the process specificity. To formulate the problem, when taking the decision, the language of binary relations and criterial language of selection description were used. The language of binary relations is more general as compared to the criterial language, because it does not require the numerical estimation of the quality of every specific alternative. The criterial language is applied when the comparison of alternatives comes down to comparing the corresponding figures. Herewith, multicriteriality, i.e. estimating the alternative by using several factors rather than one is possible (Chernorytckii, 2001).

The initial purposes of the corporations entering the ICS are not always entirely specified. That is why at the initial stage in order to form the model, it is necessary to use a more general language. This is a language of functions' selection. We will assume that $U$ is a fixed aggregate of the purposes related to the alliance foundation for the "A" corporation, i.e. $U$ is an aggregate of nonempty subsets of the set of alternatives A. The selection function (for $U$) includes the purposes of establishing the strategic ICS with the "C" corporation, i.e. the reflection of $C$ comparing the subset $C(B) \subseteq B$ (i.e. the subset of "selected", "the most favorable"

alternatives of purposes) to any set $B \in U$. In a special case, if there is the relation of the purposes preference $R$, the selection function can be defined by the congruence $C(B) = MaxRB$. In this case the set of purposes $C(B)$ coincides with the ICS final purposes – a set of maximum elements from $B$ as to $R$. The specified model of the ICS purposes is formed on the basis of the decision-making theory.

**Stipulating the Stability Model to Manage Risk Factors of Innovation Projects**

Strategic purposes of the ICS foundation must comply with the economic essence of dynamic processes of the ICS development and ensure the maintenance of competitive advantages during all ICS life cycles (Jeffrey, 2004). Regardless of the phases of the ICS and globalization life cycle, the basic criteria of estimating the level of the ICS economic development include the improvement of the social and economic efficiency of production based on the innovation activity.

The indefiniteness and risk are an objective reality of the innovation project, its integral part covering all its phases and stages of implementing.

Let us imagine the hypothetic model of ICS and the innovation project as a system formed of three interdependent systems: the ICS system, risks system consisting of risk factors and system of conditionally defined stages of implementation. The aggregate of these systems makes up a model of globalization (ICS) and real innovations. The innovation project is also defined by the aggregate of the above systems and is a cycle process – the innovation system that subordinates to the laws of the theory related to systems' optimal managing.

The innovation system is a system which implementation is associated with risks when solving both current and long-term tasks of investing and innovation projects of different scales. The whole variety of approaches to researching systems is into analysis and synthesis. In their turn, they are classified as follows: analysis – functional and structural; synthesis – emergent (defining the system integrtiy properties) and synergetic (characterizing the compatibility and multiplicity of the impact). Emergent properties of investing are related to the emergency of new system properties that do not belong to either system (elements). The emergency of these properties and emergent risks with the system are the basis for the methodology related to defining the systemticity of this formation of investment (Buyanov, V.P., Kirsanov, K.A., Michaylov, L.A., 2002). Revealing emergent risks (risk factors) is a rather important process in the research. However, it only states the fact of emergence of new risks with the interrelating objects.

Synergetics – a science about self-organization – partially answers this question. The science that does not study system risks is based on the fact that it is always possible to attain the desired effect from the object by external impacts on it, i.e. to reconstruct it as the researcher wishes. However, according to the experience, in the majority of cases it is extremely difficult.

The offered approach to forming the model of ICS stability management in the context of globalization is rather general. The criteria and their compliant target functions characterize the purpose only indirectly; sometimes better, sometimes worse, but always approximately. In this context it is necessary to speak about replacing criteria, i.e. such criteria of setting the purpose that only indirectly characterize the degree of achieving the associated purpose. In fact, all criteria are "replacers", because nothing can be accurately measured. When forming the stability model, it enabled the authors to reveal the impact of risks on the innovation project efficiency.

The stability model is formed by using the author's method to analyze the innovation project sensibility taking into account risk factors, and is a logical extension of the sensibility analysis.

The method of analyzing the innovation project sensibility is a mono-criterial optimization task, i.e. when applying it; one target function – a factor that affects the innovation project efficiency – is used. The authors offer to consider the further development of the sensibility analysis method: to move from mono-factorial to multi-factorial analysis by using the analytical method of S. Pontriagin (1956) – to solve variation tasks with limitations found when optimizing management in dynamic systems. The analytical method explained by S. Potriagin is applied to stipulate the method of the innovation project stability in the context of indefiniteness and risk. The method of defining stability of investing calculates limits of the factors that affect the innovation project efficiency when solving direct and inverse tasks.

The innovation project is a comprehensive dynamic system. To manage its risks, it is necessary to consider many factors of the risk (risk factors). In a number of cases it is possible to reduce risk factors to one risk and thereby return to a famous method of mono-criterial optimization. The simplest method of such reduction is so called criteria *weighing.* If $f_1(x) \dots, f_n(x)$ are target functions expressing values of the used criteria, conforming with the impact of this criteria on the investing efficiency, then a positive weight coefficient $\lambda_i$ is selected for each function. The weighing of criteria (target functions) $f_1(x) \dots, f_n(x)$ consists in replacing them by a single criterion (target function)

$$f(x) = \lambda_1 . f_1(x) + \cdots + \lambda_n . f_n(x)$$

(Chernoruchcky, 2001).

The structural analysis studies a specific structural component of the system (in this case a risk factor) in its simplest form. The features of structural components on various levels, when forming the risks management model, are the subject matter of

the study under this approach. The approach offered in the work allows to stipulate the systematicity of the estimation and management of the innovation project risks, and to prepare pre-requisites for further researches. The risks (risk factors) impact on the efficiency of the innovation project was analyzed on the basis of integral indicators: net present value $(NPV_T)$, profitability index $(PI_{T^d})$, internal rate of return $(IRR)$, and payback period $(PP_{T^d})$. The sensibility of the efficiency indicator to changes of risk factors is estimated by defining the elasticity of the indicator for a specific factor. We will denote risk factors as $q_1 \dots \dots q_n$, and, using their values, we will obtain their formulas

$$NPV(q_1, q_2, q_3 \dots \dots q_n.) = 0.$$

The model of the innovation project stability can be defined as a variety of sets of risk factors values $q_1, q_2, q_3 \dots \dots q_n$ that comply with the inequality system

$$NPV(q_1) = 0;\ NPV(q_2) = 0;\ NPV(q_3) = 0;\ \dots\dots;\ NPV(q_n) = 0.$$

When complying with the conditions imposed on $NPV$, values of the indicators, $PI_{T^d}, IRR, PP_{T^d}$, change respectively.

Let's consider forming of the area of the innovation project stability under the impact of changing, for example, a factor (risk factors): profit $(CF_{t1}, CF_{t2,\dots,} CF_{tT})$, components of capital investments - $(IC_{t1}, IC_{t2\dots,} IC_{tT})$ , rates of return $(r_{1,\dots,} r_{2,\dots} r_n)$, on the innovation project efficiency.

I. We will define the maximum value by which the influencing risk factors $\{(CF_{t1}, CF_{t2,\dots,} CF_{tT})\}; (IC_{t1}, IC_{t2\dots,} IC_{tT})\}$ may increase upon the condition that one of the integral indicators, for example, a key $NPV$ is equal to 0, i.e. under which maximum values of risk factors' change the innovation project will have an integral breakeven point.

We will assume that the results of the innovation project have changed because

- *The profit $CF_{tT}$ decreased by several per cents $(q_1)$,*
- Capital investments $(IC_{t1},)$ increased by several per cents $(q_2)$,
- Capital investments $(IC_{t2})$ increased by several per cents $(q_3)$,
- And so on according to the composition of capital investments.

Let's calculate the maximum values of factors $q_1, q_2, q_3$, where the innovation project will have an integral breakeven point $(NPV = 0)$.

As mentioned above, in a number of cases it is possible to reduce risk factors to one risk, and thereby to return to the famous method of mono-criterial optimization which was used by the authors. $q_1, q_2, q_3 \ldots\ldots q_n$ are calculated in a succession: firstly, for example $q_1$ (limiting change of the profit) is calculated,
$q_2, q_3 \ldots\ldots q_n$ are not used in calculations (change of capital investments), then for example, $q_2$ (limiting change of capital investments $IC_{t1}$,) is calculated.
$q_1, q_3 \ldots\ldots q_n$ are not used in calculations, etc.

It is possible to make calculations by using the Microsoft Excel software, and the cyclic function "Goal Seek" or "Search for Solutions". As a result, the research stipulated the model of the area of the innovation project stability and risks analysis. It is possible to form it by using the Microsoft Excel or MATHCAT software (a system of computer algebra from a class of automated design systems focused on preparing interactive documents with calculations and virtual assistance).

The work resulted in applying the method of system optimization when forming the model of ICS impact on the estimation of risks when managing the innovation project. This method is based on methods of limiting values of factors that bring the calculation value of the relevant investment efficiency criteria to the critical limit when solving direct tasks.

**Discussion of the Obtained Results**

Managing risks of the innovation project in the context of globalization (ICS) is complicated by the in homogeneity of data about mechanisms that regulate various internal processes. It makes the authors limit themselves to describing risks in the form of final functional correlations. When there are a lot of factors to take into account, in order to make the preliminary conclusion about their value, methods of logic algebra are used.

Firstly, operational ranges of the variables' changes are quantized to separate levels, and the Boolean model of the system is formed by using the method of minimizing the Boolean functions. Afterwards the task related to the substantial interpretation of Boolean models is solved. The stability model is formed by using the author's method to analyze the innovation project sensibility taking into account risk factors, and is a logical extension of the sensibility analysis. The method of analyzing the innovation project sensibility is a mono-criterial optimization task, i.e. when applying it; one target function – a factor that affects the innovation project efficiency – is used. The authors offer to consider the further development of the sensibility analysis method: to move from mono-factorial to multi-factorial analysis by using the analytical method of S. Pontriagin – to solve variation tasks with limitations found when optimizing management in dynamic systems.

The analytical method explained by S. Potriagin is applied to stipulate the method of the innovation project stability in the context of indefiniteness and risk. The method of defining stability of investing calculates limits of the factors that affect the innovation project efficiency when solving direct and inverse tasks. The innovation project is a comprehensive dynamic system. To manage its risks, it is necessary to consider numerous factors of the risk (risk factors).

The analysis made by the authors allowed to define the innovation project as a comprehensive dynamic system. It is possible to manage its risks by applying the method of stability defining that uses the model of risks management based on the analytical method of S. Potriagin.

**Conclusion**

The research stipulates the impact of integrated corporate structures (ICS) that fulfill strategic purposes of business as a subject of market relations of globalization on estimating risks of the innovation project.

For this purpose, stages of the creation and functioning of ICS were formed, and efficiency, stability of its operation stipulated in the economic and mathematic model were defined. It has been revealed that ICS stable functioning has a positive impact on the innovation project efficiency because it allows to decrease project risks, and thereby to ensure stable state of the innovation project defined by using the method of limits of the factors that affect the efficiency.

The offered approach to form the model of ICS stability management in the context of globalization is rather general. The criteria and their compliant target functions characterize the purpose only indirectly; sometimes better, sometimes worse, but always approximately. In this context it is necessary to speak about replacing criteria, i.e. such criteria of setting the purpose that only indirectly characterize the degree of achieving the associated purpose. In fact, all criteria are “replacers” because nothing can be accurately measured. When forming the stability model, it enabled the authors to reveal the impact of risks on the innovation project efficiency.

The research represents the ICS and innovation project hypothetic model as a system formed of three interdependent systems: ICS system, system of risks and system of conditionally defined stages of implementation. It allowed revealing the impact of globalization on estimating the innovation project risks. The aggregate of these systems makes up a model of globalization (ICS) and real innovation projects.

The authors think that this research is logically completed by moving from the mono-factorial to multi-factorial analysis of the innovation projects

stability subject to using the analytical method of S. Pontriagin – solving variation tasks with limits found when optimizing management in dynamic hierarchical systems of the globalization processes.

Regardless of the phases of the ICS and globalization life cycle, the basic criteria of estimating the level of the ICS economic development include the improvement of the social and economic efficiency of production based on the innovation activity.

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