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Management of Business Risk in Conditions of Globalization

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Abstract--- *This article reveals the opportunities that are opening in the context of globalization, expansion of world markets, and accelerated pace of economic, political and social transformations.*

The contradictory processes, induced by globalization require close study, assessment, correlation of all benefits and possible threats. The possibility of managing them at various levels of social relations needs to be determined. It is possible to evaluate and look for opportunities to manage globalization processes not only at the global level to reduce risks (threats), but also at the level of countries and their associations, at the level of economic entities, i.e. all sorts of commercial organizations, and at the level of individual activity of people.

The research considers the theoretical basis of the effect of the impact on the risk of globalization at derived levels. A systematic scientific approach is needed to define the fundamentals of risk management and understanding globalization processes, since the effects on globalization processes must be balanced and have a long-term positive effect on all levels of social relations, helping to choose optimal development paths that guarantee minimal risks generated by globalization processes.

Keywords--- *Globalization, Risk, Risks of Globalization, Risks of Entrepreneurship, Business Environment, Organizational Changes, Organizational Development, Management Concept*.

I. INTRODUCTION

The management of risks of business environment transformation in the context of globalization is a system that comprises such fundamental components as risk identification, risk analysis, risk assessment, risk situation management or risk avoidance, monitoring of environment and intermediate results, and management evaluation. These components are interconnected by a system of direct and inverse relations and represent a time-continuous process of risk management.

The external risks that any company faces include political, economic (market-determined), natural, man-made, and social ones. A combination of such risks in a specific region is a measure of the aggressiveness of external environment in relation to the company's activities. The risks of economic globalization for a particular country (region, superregion) are determined by the ratio of external environment risks with partner countries, the economic relations with which are developing most actively.

In the conditions of economic globalization, the activities of subjects, involved into the integration, are exposed to threats, which grow in number as the integration penetrates the world economy and draws national economies closer.

The significant market expansion due to economic and political integration of countries and the weakening of

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barriers to cross-border trade enhance economic (market) and political risks in the activities of subjects, involved into the integration. Stringent environmental standards and more frequent natural disasters impede the operations of companies and increase the share of natural and man-made risks. Strengthening of the role of companies in public life, as one of the factors of survival in the conditions of economic globalization, contributes to a significant increase in social risks in their operations.

The management of risk of globalization, which the subjects of economy integration have to face, is based on the management of external risks by each company taken separately. The analysis and assessment of business risks in the conditions of globalization begins with determining such factors as the total profitability of companies, the level of economic integration of the country with the rest of the world, and common external risks, including economic, political, natural, man-made and social ones [1].

The business resource in national economy allows achieving significant economic results. This can be observed in developed countries that actively exploit this resource, making a significant contribution to the total product of these countries. In Russia, the national economy expands due to the engagement of untapped business resource.

To make a tangible impact on the risk of globalization at lower levels, it is needed to adopt a systematic scientific approach, determine the basics of risk management, and understand the globalization processes. The impact on globalization processes must be balanced and have a long-term positive effect at all levels of social interactions, helping to choose the best development paths and to guarantee minimal risks, generated by the globalization processes.

The business risk affects the expansion of competitive environment through the economic conditions, when entrepreneurs increase the limits of profitability and expand the boundaries of their influence, which translates into the need to manage the risk.

II. Literature Overview

Few studies have been published on business risk management in the context of globalization. Available work in this field, focused on political, economic, and social aspects of globalization, mainly belongs to western researchers. We find especially interesting the works by R. Robertson, P. Rutland, Alan Tate, W. Muller, Michael D. Intriligater, Michali Shimai, P. Bairoch, R. Kozul-Wight, R. Baldwin, S. Gill, and Samuel P. Huntington.

In Russia, general problems of globalization have been investigated by M.G. Delyagin, V. Inozemtsev, V. Rybakov, V. Maksimenko, G. Shakhnazarov, M. Cheshkov, N. Kosolapov, N. Simoniya, S. Chugurov, S. Afontsev, A. Sosnin, S. Peregudov, A.V. Nazarchuk, S.I. Dolgov, E.A. Azroyants, M.A. Biryukova, T. Koychuev, I.M. Podzigun and others.

Entrepreneurship have been gaining much attention in economic studies. We would like to mention such authors as B. Ichitovkin, A. Isahodzhaev, O. Chechetkin, V. Savchenko, A. Slepokurov, V. Krupnov, G. Danishevskaya, A. Vilensky, V. Zubakin, V. Afanasyev, V. Ivanchenko, and Y. Rovensky.

In modern conditions, studying risk prevention factors appears most important.

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III. METHODS

The concept of 'risk' in economic studies has always received special attention.

The globalization processes changed the perception of the external environment since:

- The borders are blurring and the sphere of international economics and politics becomes a factor influencing the activities of subjects, involved into the integration. For companies and individuals, this means an expansion of the external environment beyond the national territory;
- An acute uncertainty manifests itself in both geopolitics and economy, being caused by the growing number of participants. Thus, in geopolitics, it is necessary to take into account not only the interests of various countries, but also large transnational companies and financial structures, which also play a significant role in international relations;
- The integration processes transform local crises into global phenomena affecting the interests of all active participants of international relations. Obviously, if taken in absolute terms, the number of crises has decreased as compared to the past. However, isolationist tendencies had prevailed before, and a local crisis (economic, military, political, etc.) could only affect interests of few parties;
- The factor of instability, emerging during integration, smoothly migrates to other, previously inaccessible territories.

All these negative trends affect, to various extend, the subjects of globalization—states, companies, and individuals. These trends in integration can be described in a single term as *risk of globalization*.

For a country, the threat of integration and the risk of globalization comprise several components:

- The system controllability is lost to some extent, i.e. the number of instruments with which the state could influence economic processes is reduced, and the economic crises of neighboring countries (participants to the integration) have a greater effect on the domestic economy;
- The level of competitiveness of the economy, which is determined as the ratio of export and import, acquires great importance. If the economy is not sufficiently competitive, then in case of progressing integration the trade balance will be negative;
- The lack of attractiveness of the economy for production factors is a threat to economic growth, i.e. gross investment will decrease, the balance of payments will deteriorate, and skilled labor force will migrate abroad.

For a company, the threat to business operations in the context of globalization is an increasing number of competitors in the market, which is not determined by national borders but by the flow of goods from foreign manufacturers. At the same time, companies are partially deprived of state protection in local markets. The growing uncertainty and unpredictability of market processes is caused by the expansion of the market far beyond the national borders [2].

For an individual, these risks are associated with social transformation of the society, changes in behavioral stereotypes, and adaptation to the new conditions and the new values.

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In general, all this can be combined into the concept of the risk of social adaptation to new economic and political conditions. In addition, the threat of economic, environmental, information crises and military-political, civilizational, religious, ethnic conflicts is increasing.

The risk of globalization is the result of not only external influence, but also internal processes. Thus, erroneous internal economic policy can lead to weakening and loss of competitiveness of the national economy and hence to the vulnerability of the economy to the external adverse factors.

However, not all negative trends in the economy, society and public sector should be explained by the globalization-induced processes.

Globalization is only a tool, although rather powerful in terms of economic, social and political development [3].

Thus, in order to take into account all the constituent factors, it is necessary to build a general model for assessing the risk of globalization, a model that can be applied to any subject of integration. The general assessment parameters can be the risk of integration, the level of integration for all subjects, and the usefulness for people and society or the efficiency for countries or the profitability for companies.

The integration level indicator (i) is differentiated depending on the degree of mutual relations of different countries with each other at various levels (political, economic, socio-cultural):

$$I = \begin{pmatrix} i_{11} & i_{12} & \dots & i_{1n} \\ i_{21} & i_{22} & \dots & i_{2n} \\ \dots & \dots & \dots & \dots \\ i_{n1} & i_{n2} & \dots & i_{nn} \end{pmatrix} \quad (1)$$

where i_{ij} is the level of integration between i and j countries and n is the number of all countries.

Therefore, overall integration level i for the i-th country can be calculated as follows:

$$i_i = \frac{\sum_{j=1}^{n} \left[i_{ij} \times \sum_{i=1}^{n} i_{ij} \right]}{\sum_{i=1}^{n} \sum_{j=1}^{n} i_{ij}} \quad (2)$$

It is necessary to take into account that comparing a country with itself gives 1 and, therefore, $i_{ij} = 0$ at $i = j$.

The value of integration level for a particular country can be found through the sum of indicators of the level of

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integration with other countries. Such indicators are multiplied by the coefficient of their weight in the global economy. The coefficient is determined by dividing the sum of indicators of the level of integration of other countries with the given country by the sum of the entire matrix [4, 16]. Therefore, when determining the level of economic integration, it is necessary to factor in the role of the partner country in the world economy.

However, the relative coefficient of internal risk is more useful. This coefficient is found by dividing each risk indicator of the subject of integration by their total amount:

$$K_E^R = \frac{R_E^{In}}{R_E^{In} + R_S^{In} + R_P^{In}},$$

$$K_S^R = \frac{R_S^{In}}{R_E^{In} + R_S^{In} + R_P^{In}},$$

$$K_P^R = \frac{R_P^{In}}{R_E^{In} + R_S^{In} + R_P^{In}}. \qquad (3)$$

where K_E^R, K_S^R, K_P^R are the indicators of relative internal risk of globalization for a subject of integration: a company (E), a country (S), or an individual (P), respectively.

However, it is necessary to determine the parameters common to all subjects:

- The level of risks in the context of globalization for a particular country is zero at the same ratio of risk and profitability, regardless of the level of integration. If the value of risk in relation to profitability is lower or higher than this average ratio in the super region and in the world, then there is the risk of globalization.
- The ratio of risk in the region and beyond does not show the level of risk without the same ratio with profitability.

The risk of globalization can be expressed in terms of probabilistic criteria.

Assuming the range of indices u/r for the countries participating in integration follows the law of normal distribution, then the probability density for a given set can be expressed by the following formula:

$$f(x) = \frac{1}{\sqrt{2\pi e^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} \qquad (4)$$

where $f(x)$ is the indicator of the density of normal distribution of the value of x, e is epsilon (quantity), and μ is the average variance and y^2 is the quadratic variance that are calculated as follows:

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$$\mu_i(x) = \sum_{j=1}^{n} p_{ij} x_j \qquad (5)$$

where $\mu_i(x)$ is the mathematical expectation (average value) of the distribution of the indicator x, which forms the region of values ($x_1, x_2, \dots, x_n$) with the probabilities of occurrence ($p_{j1}, p_{j2}, \dots, p_{jn}$), where $j = 1,2,\dots,n$ for the i-th country;

$$\sigma_i^2(x) = \sum_{j=1}^{n} p_{ij}\left(x_j - \mu_i\right)^2 \qquad (6)$$

where $y_i^2(x)$ is the variance (standard deviation) of the indicator x, which forms the region of values ($x_1, x_2, \dots, x_n$) with the probabilities of occurrence ($p_{j1}, p_{j2}, \dots, p_{jn}$), where $j = 1,2,\dots,n$ for the i-th country.

Since x forms the region of values ($x_1, x_2, \dots, x_n$) and, in our case, it satisfies equality $x = u/r$, n is the number of countries participating in integration, p_{ij} can be found through the level of integration between i and j countries (i_{ij}), then:

$$p_{ij} = \frac{i_{ij}}{\sum_{j=1}^{n} i_{ij}}, \qquad (7)$$

where

$$I = \begin{pmatrix} i_{11} & i_{12} & \dots & i_{1n} \\ i_{21} & i_{22} & \dots & i_{2n} \\ \dots & \dots & \dots & \dots \\ i_{n1} & i_{n2} & \dots & i_{nn} \end{pmatrix}. \qquad (8)$$

The level of integration $i_{ij} = 1$ if $i = j$, since the level of integration in the same country is compared. However, for risk analysis it is necessary to exclude the values of the analyzed i-th country, taking $i_{ij} = 0$ at $i_{ij} = 1$, and then the set will take the form:

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$$I = \begin{pmatrix} 0 & i_{12} & \dots & i_{1n} \\ i_{21} & 0 & \dots & i_{2n} \\ \dots. & \dots. & \dots. & \dots. \\ i_{n1} & i_{n2} & \dots & 0 \end{pmatrix},$$

$$P = \begin{pmatrix} 0 & p_{12} & \dots & p_{1n} \\ p_{21} & 0 & \dots & p_{2n} \\ \dots. & \dots. & \dots. & \dots. \\ p_{n1} & p_{n2} & \dots & 0 \end{pmatrix} \quad (9)$$

This transformation makes it possible to use the levels of integral indicators as probabilistic values and apply probabilistic analysis since $Sp_{ij} = 1$ for any i-th country.

Substituting the already known parameters into Formulas 6 and 7 and replacing the values of p_{ij} and x_j, we define the external risk of globalization of the subjects of integration:

$$\mu_i(u/r) = \sum_{j=1}^{n} p_{ij}(u_j / r_j), \quad (10)$$

where $\mu_i(u/r)$ is the mathematical expectation (average value) of distribution of indicator u/r (ratio of usefulness to risk), which forms the range of values ($u_1/r_1, u_2/r_2, \dots, u_n/r_n$) for all countries of the world (n) with the relative level of integration of the i-th country with the other countries ($p_{j1}, p_{j2}, \dots, p_{jn}$), respectively.

$$\sigma_i^2(u/r) = \sum_{j=1}^{n} p_{ij}\left(u_j / r_j - \mu_i\right)^2, \quad (11)$$

where $y_i^2(u/r)$ is the variance (standard deviation) of indicator u/r (ratio of usefulness to risk), which forms the range of values ($u_1/r_1, u_2/r_2, \dots, u_n/r_n$) for all countries of the world (n) with the relative level of integration of the i-th country with the other countries ($p_{j1}, p_{j2}, \dots, p_{jn}$), respectively.

The risk of each subject of integration can be described by formulas:

$$R_{E,i}^{Out} = \frac{1}{\sqrt{2\pi e^2}} \int_{u_{E,i}/r_{E,i}}^{+\infty} e^{-\frac{(x-\mu_{E,i})^2}{2\sigma_{E,i}^2}}, \quad (12)$$

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$$R_{E,i}^{Out} = \frac{1}{\sqrt{2\pi e^2}} \int_{u_{E,i}/r_{E,i}}^{+\infty} e^{-\frac{(x-\mu_{E,i})^2}{2\sigma_{E,i}^2}}, \quad (13)$$

$$R_{P,i}^{Out} = \frac{1}{\sqrt{2\pi e^2}} \int_{u_{P,i}/r_{P,i}}^{+\infty} e^{-\frac{(x-\mu_{P,i})^2}{2\sigma_{P,i}^2}}. \quad (14)$$

Here are presented the external risk of globalization (Out) and the ratio of usefulness to risk for subjects of integration of the i-th country: a company (E), a country (S), or an individual (P).

The overall risk of globalization for all the subjects of integration of one country (i) can be found by formula:

$$R_i^{Gl} = \frac{R_S^{In}}{R_S^{In}+R_E^{In}+R_P^{In}} R_S^{Out} + \frac{R_E^{In}}{R_S^{In}+R_E^{In}+R_P^{In}} R_E^{Out} + \frac{R_P^{In}}{R_S^{In}+R_E^{In}+R_P^{In}} R_P^{Out} \quad (15)$$

where $R_S^{In}, R_S^{Out}; R_E^{In}, R_E^{Out}; R_P^{In}, R_P^{Out}$ are the indicators of internal In and external Out risk of globalization of the subjects of integration a company (E), a country (S), or an individual (P).

These formulas present the risk of globalization in such a way that if the indicator exceeds 50%, then the country will suffer rather than benefit from globalization, i.e. the losses outweigh the gains, and vice versa. In general, no country in the world is immune to the situation when the risk of globalization exceeds the benefits.

Hence the risk of globalization R^{Gl} on a global scale is equal to:

$$R^{Gl} = \frac{1}{\sum_{i=1}^{n}\sum_{j=1}^{n} i_{ij}} \sum_{i=1}^{n}\left(R_i^{Gl} \times \sum_{j=1}^{n} i_{ij} \right), \quad (16)$$

where i_{ij} is the indicator of integration at the economic level between the i-th and j-th countries. In this case, the designation of weight is the role of the country in the global economy.

Thus, the risk of globalization can be assessed for the whole world and for specific countries on the basis of identifying the subject of integration in the processes of globalization in the system 'individual–company–country" in the inter-country relations at the level of economic, political and socio-cultural cooperation and internal relationships for the distribution of benefits and risks of globalization, on the basis of the indicators of usefulness, the risk of economic activity, the level of integration into geo-economic, geopolitical and intercultural processes.

The process of managing risks of globalization can be divided into two large blocks, each including several

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stages:

- The first block is assessment of the risk of globalization,
- The second block is the methods of managing the risk of globalization.

Assessment of the risk of globalization includes the following stages:

- Analysis of globalization processes, which identifies the trends in global development, global threats, hazards and prospects for inter-country cooperation for economic, political and cultural relations;
- Analysis of opportunities and threats of globalization for a given country, which determines what advantages and benefits a particular country can have in the globalized world; next, the most probable dangers and threats of globalization, pertaining to a specific country or region, should be identified to establish a range of potential opportunities or development paths for the country in the context of globalization;
- Analysis and assessment of the subjects of integration according to specified parameters and general integral assessment of risk, usefulness (profitability or efficiency) and level of integration for each subject of integration, each country individually and all countries of the world;
- General assessment of the risks of globalization for a particular country by summing the ratios of external and internal risks of globalization for all subjects of integration.

The most important tool of the risk of globalization management is the effective positioning of a country in the processes of globalization [17].

Reducing risks, increasing the comfort or profitability of the subjects of integration (a country, a company or an individual) can be achieved as follows:

- It is necessary to reduce the risks for those subjects of integration whose internal and external risks of globalization are the highest. In this case, the maximum effect can be obtained from reducing the overall risks of the subjects of integration, or their usefulness (efficiency, profitability) can be enhanced;
- Countries should clearly define cooperation priorities in the integration processes, i.e. the countries, the cooperation with which should be established first at all levels, and the countries, the cooperation with which can be postponed until the economy and the society are ready to expand it;
- It is necessary to predict long-term trends in globalization and correlate them with the socio-economic development of the country.

At the first and second stages of integration, the most important component is economic and political development, while further on the development of a person, community and society will be most relevant.

Therefore, it is necessary to develop the economy, taking into account the processes of integration into the world economy, and then adapt the society to preserve the original culture, language, and traditions.

The risk mitigation methods can be considered at the stage when the change in the initial parameters affects the integral indicators of the risks of globalization [5, 6].

To determine the risks of globalization, it is necessary to analyze and determine set I_s (level of country), set R_s

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(risks of globalization for the country as a social institution), and set U_s (efficiency of country):

$$R = \left(r_1 \quad r_2 \quad .... \quad r_n\right),$$
$$U = \left(u_1 \quad u_2 \quad .... \quad u_n\right), \qquad (17)$$

where R_i and U_i are the risk and the efficiency of the i-th country and n is the number of countries in the world.

Then these sets can be represented in a more convenient form U_s/R_s:

$$\frac{U}{R} = \left(\frac{u_1}{r_1} \quad \frac{u_2}{r_2} \quad .... \quad \frac{u_n}{r_n}\right). \qquad (18)$$

Using sets I_s and U_s/R_s, one can find the quantitative value of the external risk of globalization for a country's activity:

$$R_{S,i}^{Out} = \frac{1}{\sqrt{2\pi e^2}} \int_{u_{S,i}/r_{S,i}}^{+\infty} e^{-\frac{\left(x-\mu_{S,i}\right)^2}{2\sigma_{S,i}^2}}. \qquad (19)$$

The quantitative assessment of the risks of change of environment in the context of globalization makes it possible to more accurately measure the results of country's activity in the implementation of a particular policy and to correlate the results of its activities with those of other countries. Most importantly, the assessment of the risk of globalization is the main tool of the scientifically based approach to managing risks of globalization at the state level.

Managing the risks of globalization of state activity is a comprehensive, interrelated management and assessment of three elements: the risk of state activity, the effectiveness of its functioning, and the level of political integration of the state with other countries.

The institutional approach in research has changed the attitude towards economic processes and phenomena. Researchers added institutions and non-economic factors to the analysis of economic categories.

The institutional environment has a great influence on the behavior of economic entities. At present, the institutional environment of Russia has already been formed and continues to develop [7, 9]. Its main features are uncertainty and unpredictability, which stirs interest in studying the influence of institutions on the economy.

It should be noted that in the economic literature there are practically no works that treat institutions as a source of specific risks. In our opinion, there are following types of business risk:

- Production risk;
- Commercial risk;

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- Financial risk.

Institutional risk is the opportunity to incur losses or lose profit as a result of the external influence of institutions on a business entity or the ineffective management of its invisible assets. All economic entities are subject to institutional risk by virtue of its specificity.

Institutional risk arises from:

- Government intervention;
- Imperfection of legislation and contractual relations;
- Corruption;
- Lack and asymmetry of information;
- Opportunistic behavior of counterparties;
- Incompliance with generally accepted norms and customs in the society;
- Ineffective management of intellectual assets.

The imperfection of legislation is one of the sources of institutional risk for entrepreneurs.

The activity of economic entities (producers) depends on many factors. Using the mathematical apparatus, the behavior of entrepreneurs in a civilized market competition can be expressed as a function of various factors:

$$f = (\chi_1, \chi_2, \cdots, \chi_n) \qquad (20)$$

where f is the function of the behavior of an entrepreneur and χ is the factor influencing the behavior of an entrepreneur in the market.

However, let us simplify the model of behavior under market competition to two factors: profitability and riskiness of business activity, and the function becomes linear.

$$f = (\chi_1, \chi_2) \qquad (21)$$

It should be noted that this function is always limited. There is a 'risk threshold'—the border beyond which an entrepreneur operating in the system of market relations fails to pass.

$$f = (\chi_1 + \beta_1, \chi_2 + \beta_2) \qquad (22)$$

In Formula 22, β_1, β_2 include all additional opportunities for entrepreneurs to develop their activities.

Institutional risk is not only associated in the external relations of a company; it also roots in the internal processes. Incorrectly built management increases and predetermines risks of economic activity. Institutional risks are associated with invisible or intellectual assets of a company [8].

The state certainly plays a number of roles in the economy. Ultimately, the state, through its action or lack of action, can both form risks for entrepreneurs and reduce them through the development and implementation of a positive, clear and long-term economic strategy.

Risks need to be identified; after that, the quantitative and qualitative analysis of threats and risks can be carried

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out. The use of such methods can be impossible due to the lack of reliable information. In this case heuristic methods, relying on experience and intuition, can be applied.

Expert methods are used in the development of new directions or concepts, one of the areas of which is economic risk assessment. After identifying manageable risk factors, the formulation of risk management objectives should be formulated.

The formulation of problem, the formation of risks minimization solutions, and the choice of management decisions are included in the decision making block. The final step in the algorithm is the organization of implementation and control of the management decision.

The system of indicators, characterizing the quality of industrial entrepreneurship by complex risk, compared to the system of indicators, characterizing the quality of industrial entrepreneurship by order, can be expanded both in terms of volume and in terms of the relations of the indicators, included in one system, among themselves [9].

In this case, the role and the place of each economic efficiency indicator changes in ensuring the progressive development.

For example, in the system for regulating the development of production entrepreneurship by order, the determining factor is cost-effectiveness, while in the system for regulating the development of production entrepreneurship by complex risk, the determining factor is return on margin. The latter characterizes the economic efficiency of the results of labor to consumers.

The change in the system of indicators reflects the results of using the system for regulating the development of industrial entrepreneurship by complex risk, which include the following types of regulation:

- Attraction of additional capital to production;
- Intensity of capital flow;
- Usage of resource;
- Incentive management;
- Consumption of production resources;
- Sales of the results of labor to consumers.

They are interrelated with each other, complement each other and form a system for regulating the development of productive entrepreneurship by complex risk [10, 11].

It should be noted, however, that at present companies implement few inventions and R&D products into manufacturing. As a result, companies have a low level of profitability of products. As a result, the cost of goods (works, services) sold can be expressed as follows:

$$C_c = \frac{C}{3}(3 + C) = C\left(\frac{C}{3} + 1\right), \qquad (23)$$

where C_c is the ability of the cost of products (works, services) sold to self-expansion, thousand rubles; 3 is the

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costs of production and sales of products (works, services), thousand rubles; C is the cost of goods (works, services) sold, thousand rubles; $\frac{C}{З}$ is the ratio of cost leverage; and $(З + С)$ is the sum of the cost of goods sold and the cost of production and sales of products (works, services), thousand rubles.

The ability of the cost of products (works, services) sold to self-expansion improves as the coefficient of cost leverage increases. The product of two indicators increases if the ratio of the cost of production and sales of products (works, services) and the cost of goods (works, services) sold changes in favor of the latter and their sum increases.

The ability of profit to self-expansion can be represented as follows:

$$C_n = \frac{П}{C}(П + C) = П * \left(\frac{П}{C} + 1\right), \qquad (24)$$

where $С_{П}$ is the ability of profit to self-expansion, thousand rubles; $П$ is profit (net income), thousand rubles; C is the cost of goods (works, services) sold, thousand rubles; $\frac{П}{С}$ is the ratio of profitability of products (works, services) sold, thousand rubles; and $(П + С)$ is the amount of profit (net income) and cost of goods (works, services) sold, thousand rubles.

The ability of profit to self-expansion improves as the ration of profitability of products (works, services) sold increases. The product of the above indicators increases if the ratio of the cost of goods sold and the profit changes in favor of the latter and their sum increases [12, 20]. The higher the ratio of profitability of products (works, services) sold, the better the ability of profit to self-expansion due to the rational formation of the cost of products (works, services) sold.

The comprehensive assessment of changes in the profitability of goods sold is reflected in the product of the indices of its qualitative and quantitative sides. The index of the qualitative side of the profitability of goods sold is determined by the following formula:

$$J_k^p = \frac{П^1}{C^1} : \frac{П^0}{C^0}, \qquad (24)$$

where J_k^p is the index of the qualitative side of the profitability of goods sold; $П^1, П^0$ are, respectively, the profit (net income) in the reporting and base periods, thousand rubles; and $C^1 C^0$ are, respectively, the cost of goods (works, services) sold in the reporting and base periods, thousand rubles.

The index of the quantitative side of the profitability of goods sold is calculated by the following formula:

$$J_0^p = \frac{П^1 + C^1}{П^0 + C^0} \qquad (25)$$

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The comprehensive assessment of changes in the profitability of goods sold is reflected in the integral index, which is calculated by the following formula:

$$J_u^p = J_к^p * J_0^p \qquad (26)$$

These indices are interrelated and complement each other in the comprehensive assessment.

The indicators of economic efficiency characterize the development of industrial entrepreneurship by complex risk. The relationship of quality indicators with each other can be expressed by the following formula:

$$P_c = \lambda_к * П_т * С_з * Ф_в * З_т * \lambda_з * Р_п, \qquad (27)$$

where P_C is the return on equity; $\lambda_к$ is the leverage of capital; $\Pi_Т$ is the salary return; $C_З$ is the share of the wage fund in labor costs; $\Phi_В$ is the labor costs per 1 ruble of aggregate capital; $З_c$ is the costs per 1 ruble of total income; $\lambda_з$ is the leverage of costs; and $Р_П$ is the profitability of goods (works, services) sold.

For the comprehensive assessment of the development of industrial entrepreneurship by complex risk, we suggest the following formula:

$$I_6=I_л*I_п*I_с*I_ф*I_З* I_{\lambda з} *I_р \quad (28)$$

where I_6 is the integral index of the indicators of economic efficiency of production entrepreneurship by complex risk; $I_л$ is the integral index of leverage of capital; $I_П$ is the integral salary return index; $I_С$ is the integral index of the share of the wage fund in labor costs; $I_Ф$ is the integral index of labor costs per 1 rub of aggregate capital; $I_з$ is the integral cost index per 1 rub of total income; $I_{\lambda з}$ is the integral index of the leverage of costs; and $I_р$ is the integral index of profitability of products (works, services) sold.

Based on the comprehensive assessment of each quality indicator included in the system, let us extend Formula 29 as follows:

$$I_{v1} = I_к^{\lambda} * I_0^{\lambda} * I_к^{П} * I_0^{П} * I_к^{с} * I_0^{с} * I_к^{ф} * I_0^{ф} * I_к^{з} * I_0^{з} * I_к^{\lambda з} * I_0^{\lambda з} * I_к^{р} * I_0^{р} \qquad (29)$$

By grouping the indices of indicators of economic efficiency of industrial entrepreneurship by complex risk, it is possible to comprehensively evaluate the results of the effect of both a specific type of regulation and all types of regulation of its development. The above indices can be grouped both by the qualitative and quantitative side of the data of the indicator system, and one can make the assessment of predominance of the intensive path or the extensive path of development of productive entrepreneurship by complex risk.

$$I_к^{v1} = I_к^{\lambda} * I_к^{П} * I_k^{с} * I_к^{з} * I_к^{\lambda з} * I_к^{ф} * I_к^{р} \qquad (30)$$

where I_k is the integral index of the qualitative side of the indicators of economic efficiency, which

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characterizes the intensive path of development of industrial entrepreneurship by complex risk; and I_o is the integral index of the quantitative side of the indicators of economic efficiency, which characterizes the extensive way of development of industrial entrepreneurship for complex risk.

The system matrix reflects the basic matrices, which factor in the possible ratios of the change rate of level and volume of the same indicator: leverage of cost, profitability of products (works, services) sold [12,15].

This system matrix also has derived matrices, which reflect possible ratios of change rate:

- The level of leverage of costs and the volume of profitability of goods (works, services) sold;
- The volume of leverage of costs and the level of profitability of goods (works, services) sold.

To regulate the development of industrial entrepreneurship by complex risk, we suggest using a system matrix, which fully reflects the ratios of change rates (trends) of levels and volumes of economic efficiency indicators, included in the system. This system matrix allows setting the milestones, stages and directions of the progressive development of industrial entrepreneurship by complex risk, as well as its development cycles. It also allows regulating the attraction of capital into production:

- Intensity of capital flow;
- Usage of resources;
- Incentive management;
- Consumption of production resources;
- Sales of the results of labor to consumers.

The system matrix, reflecting the system for regulating the development of industrial entrepreneurship by complex risk, consists of a set of 13 basic and 156 derived matrices, reflects possible change rates of the levels and volumes of the economic efficiency indicators, included in the system, the total number of which sums up to 1,521 variants. Together with the complex stages, it comprises 2,873 variants. Using the data of this system matrix helps to identify reserves, determine stages, cycles and directions of development, systematically and comprehensively assess the development of industrial entrepreneurship by complex risk in business entities, and regulate its progressive development. [13]

Analysis of the dynamics of indicators of economic entities over the long term showed that with the expansion of the scale of industrial entrepreneurship for complex risk, the level of leverage costs increases and the level of profitability of products (works, services) sold decrease. These changes act as trends in the regulation of the implementation of labor results. The levels of leverage of capital and profitability of products (works, services) sold vary continuously and have a wave-like character, and their volumes during progressive development tend to increase.

The levels and volumes of profitability and cost leverage form a dialectical unity and must match each other. With the development of industrial entrepreneurship, they change continuously and have a spiral character. Thus, in the formation of the next new quality in manufacturing enterprises for complex risk, the level of profitability of products (works, services) sold grows. At the same time, this level acts as a stable factor in increasing its volume.

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When this quality is outdated, the level of profitability decreases and acts as a steady factor in reducing its volume.

Thus, the method for assessing the economic efficiency of production entrepreneurship by complex risk can solve problems of forming a new quality in its development, as well as the transition from one milestone (stage) to another in the economic cycle.

IV. CONCLUSION

The need to address problematic issues related to the development of the theoretical foundations and methodology for managing the risk of globalization dictates the need to choose the ways of integration and develop effective cooperation, which is possible only with the application of scientific research methods.

Setting research objectives in the context of developing a system of methods for managing globalization risk necessitates the consideration of theoretical and methodological, methodological and applied issues, some approaches to solving.

The study of globalization led to the conclusion that:

- It is a long historical genesis of bringing nations and communities closer to a degree of mutual interest and understanding of cultural values;
- The integration at some levels, which is accompanied by differentiation into others, while maintaining the balance of points of contact and differences, since greater economic freedom gives more opportunities to choose;
- The choice of a country does not determine its participation or not participation in these processes; it is important what role it defines for itself.

That is, the processes of globalization do not depend on the subjective choice of individual countries, nations, cultures.

The processes of globalization are integration at some levels and specialization (differentiation) at others.

At some levels, these are processes of economic, political, socio-legal and cultural integration, at others - specialization and differentiation of economic zones depending on the location and types of industrial, financial, scientific and technological centers.

The processes of globalization depend only on the natural processes of human development - internationalization, NTP and modernization, informatization - and human activity - universalization (unification), standardization. Therefore, there are no alternatives to globalization, and the ways of globalization may differ, but the choice is made not by a single country, but by all economically and politically active members of the world community [14].

However, the modern model of globalization (accelerated path) is characterized by strong fluctuations in the integration processes and is currently in antiphase, which is characterized by the exacerbation of conflicts (even armed) on an economic, cultural and civilizational basis.

An alternative is the evolutionary path of globalization, characterized by a new model of economic and political

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relations, where the main link is a person, the activities of countries and economic entities (legal entities) are subordinated to the interests of the individual and society. Then the criteria for assessing the impact of globalization on the subjects of integration can be combined into the concept of *risk of globalization* and find their positive solution.

Based on the identification of subjects of integration in the processes of globalization in the system of interaction "person-state-enterprise" in inter-country relations at the level of economic, political and sociocultural cooperation and interrelations within national territories for the distribution of benefits and risks of globalization, based on indicators of utility, risk of activity (economic activity, livelihoods), the level of integration of subjects in geo-economic, geopolitical and intercultural processes may be yes on globalization risk assessments both for the whole world and for individual countries.

The definition of the methodology and methods of analysis of the risk management of globalization made it possible to determine the methods of studying the risk of transformation of the state environment in the context of globalization as a subject of integration.

The process of improving and adapting the functions of the state structure to the conditions of the social and economic situation is constantly evolving. Globalization imposes its imprint on state-building the role and functions of the state as a social institution through influencing more basic and fundamental categories and phenomena: culture, public consciousness, economics, and, accordingly, politics and political institutions.

Methods have been developed for optimizing changes in indicators of economic efficiency of industrial entrepreneurship on demand; production of complex risk. The use of these methods allows us to identify and implement internal reserves in a timely manner, justify the direction of development of types and forms of entrepreneurship, improve economic management tools and ensure its rational development.

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