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Model of Minimization of System Risks of Financial Security of Higher Education Institutions of Russia

[1]Vladimir Aleksandrovich Galanov, [2]Tatyana Nikolaevna Rodenkova and [3]Asali Magomedaliyevich Asaliyev

[1]Doctor of Economics, Professor of "Exchange Business and Securities" chair of FGBOU VPO "Russian Economic University of G. V. Plekhanov"
[2]Doctor of Economics, Professor of Finance and Prices chair of FGBOU VPO "Russian Economic University of G. V. Plekhanov"
[3]Doctor of Economics, Professor Dean of faculty of marketing of FGBOU VPO "Russian Economic University of G. V. Plekhanov"

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Abstract: In the conditions of modernization of the budgetary management and formation of market mechanisms of management by financial resources of the sphere of higher education of Russia the problem of minimization of financial risks in the course of transition of higher education institutions to the mechanism of definition of standard costs to rendering the state services is staticized. In this regard important not only to identify risks of sponsoring organization, but also to develop model of definition of financial consequences of change of parameters of the standard and per capita financing, allowing to make effective decisions on prevention of system risks. Intermediate results of the applied scientific research which is carried out by request of Department of the budgetary process, the account and the reporting of the Ministry of Education and Science of the Russian Federation are presented in the article.

Key words: Financial security of performance of the state task · Standard and per capita financing of higher education institutions · Financial risks of the founder · Assessment of system risk · Financial stability of higher education institution · Financial model of minimization of risks

INTRODUCTION

The modern policy of the Russian state consists in that the sphere of professional education from the state sphere of action became the full sector of market economy in the conditions of its financial and social and economic globalization. All models of financing of domestic professional education which are realized in our country follow from this purpose, finally. In 2013 the new Federal Law "About education in the Russian Federation" which fixes a course on reduction of legislative regulatory base of Russian education in compliance with modern market operating conditions of national economy came into force.

Gradation of System Risks Depending on a Type of the Organization of Higher Education: In our opinion, for the solution of this problem it is necessary: first, to establish controllability degree system risk; secondly, to develop economic-mathematical model of optimum distribution of financial resources between higher education institutions of different group of risks.

For the purpose of management of system financial risk all educational organizations of higher education can be divided into the following groups:

- 1st group: the federal universities (FU), the national research universities (NRU) and the higher education institutions having the status of especially valuable

Corresponding Author: Vladimir Aleksandrovich Galanov, Doctor of Economics, Professor of "Exchange Business and Securities" chair of FGBOU VPO "Russian Economic University of G. V. Plekhanov".

Table 1: Interrelation of the income and expenses of higher education institutions with level of system risk

Options of a ratio of the income and expenses of higher education institutions on educational activity	Groups of higher education institutions	Level of system risk
I > E	1st group, partially 2nd group	low
I= E	partially 2nd group partially 3rd group	average
I < E	partially 3rd group	high

objects of a cultural heritage (EVO). This category of higher education institutions has raising coefficients to the standard of the per capita financing, providing excess of the income over expenses;

- the 2nd group-the higher education institutions which are not relating to the first group, but the having income from all sources of financing, not only covering expenses on primary activities, but also allowing to form reserve funds for increase of financial stability;
- the 3rd group of higher education institutions-the higher education institutions which do not have opportunity to form reserve funds for increase of financial stability.

For the second and third group of higher education institutions of a bike probability of emergence of structural uncontrollable system risk, especially during transition from financing of higher education institutions according to individual standards to uniform per capita standards.

Key parameter for adoption of organizational and administrative decisions is the indicator of excess of the income over expenses on educational activity of higher education institutions (Table 1).

If I > E, it means either the state in addition invests these higher education institutions, or these are the high-status higher education institutions having image educational programs, being in a great demand in the market of educational services. If I= E, it means that higher education institutions have reserves or for increase in the state task, or for reduction of expenses at observance of quality of rendered educational services. If E > I approximately on 5%-10%, higher education institutions cope with this risk due to economy on expenses. But if E > I approximately for 15%-20%, such higher education institutions do not cope with this risk and they need either to be attached to more successful, or to liquidate. It is necessary to recognize such higher education institutions economically (financially) unstable.

For forecasting of risks of loss of financial stability of the third group of higher education institutions it is possible to use dynamic financial model of resource management of this group of higher education institutions. Creation of financial model is a design of the specific financial mechanism which functions are necessary and sufficient for management of financial resources of higher education institutions for minimization of system risk.

The structure of these variables is defined by administrators and managers of financial means and includes the following parameters: the budgetary ensuring performance of the state task of higher education institutions (R0), off-budget receipts for educational services (R1), financial security of realization of educational services (R2), cumulative costs of realization of educational services (W), in which W1-a factor cost on performance of the state task (executive function of the state administrators of financial means), W2-a factor cost on realization of paid educational services (executive function of the management of higher education institutions), W3-indirect expenses on performance of the state task and realization of paid educational services (administrative function and function of operational management by financial means) and also indicators of the income (D), taxes (N) and financial productivity (F) due to which the reserve fund of financial stability of higher education institutions (Fr) is created.

For the accounting of wider range of the factors influencing volumes of financial security of performance of the state task, the offered dynamic model can be added with model of distribution of resources between higher education institutions of the third group. For example, n of "effective" higher education institutions of the third group participate in performance of the state task of higher education institution. Efficiency of economic activity of i-higher education institution is defined by some function $\beta_i(r_i)$ and means excess of the income over higher education institution expenses, where $i = \overline{1,n}$, and r_i-the volume of the financial resources received by i-higher education institution. Function of efficiency $\beta_i(r_i)$ is considered as preference function at distribution of financial resources. It is necessary to provide the maximum total efficiency of higher education institutions of the third group: $\sum_{i=1}^{n} \beta_i(r_i) \to \max$.

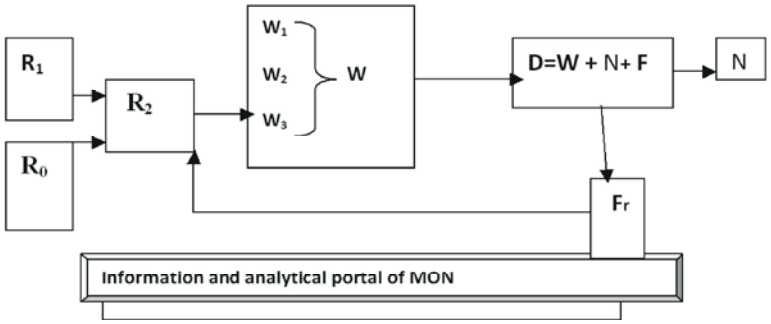

Fig. 1: Scheme of financial model of minimization of system risks

Table 2: The volume of financial security of performance of the state task for rendering educational services of higher education institutions at change of parameters of standard costs

Indicators		At initial parameters	At the changed parameters	Value change in comparison with initial parameters
Calculated value of volume of expenses for the beginning of 2014, thousand rubles		122 541 673,2	118 632 015,1	-3 909 658,1
The settlement volume of expenses for 2014 (taking into account release and reception), thousand rubles		125 006 797,7	120 808 656,8	-4 198 140,9
including	subordinated to the Ministry of Education and Science of the Russian Federation	124 220 152,7	120 035 330,6	-4 184 822,1
	non-state establishments	786 645,0	773 326,2	-13 318,8
The average indicator on unit of number of the contingent in annual expression for 2014 (taking into account release and reception), thousand rubles	subordinated to the Ministry of Education and Science of the Russian Federation	109,3	103,8	-5,5
	non-state establishments	78,6	77,3	-1,3

On condition of limitation of a distributed financial resource of R: $\sum_{i=1}^{n} r_i \le R$, the problem can be solved by distribution of financial resources between n "effective" higher education institutions. Through z_i we will designate the demand of *i-effective higher education institution* for the financial resources which volume is defined by two factors: target figures of reception and standard of per capita financing. If demands it is given more, than is available resources: $\sum_{i=1}^{n} z_i > R$ and resources are limited: $0 \le z_i \le R = 1$, that in this case for the purpose of minimization of risks it is possible to use algorithm of proportional distribution of financial resources between "effective" higher education institutions of the third group:

$$r_i = \pi_i(z_1, z_z, \ldots z_n) = \frac{z_i}{\sum_{k=1}^{n} z_k} R, i = \overline{1,n} \quad (1)$$

The Most Powerful Risk Factors: In our opinion, it is possible to carry to the most powerful risk factors:

- changing of financial security of performance of the state task for rendering the state services;
- changes in budget financing of research and federal universities;
- structural changes in the higher education sphere;
- increase in expenses at training in the higher education institutions, caused by inflationary tendencies and increase in cost of services of the third-party organizations (including energy resources, etc.);
- changing of algorithm of calculation of standards of per capita financing;

So, for example, by results of the analysis of changes of standard costs on training of one student of the higher education institution, caused by transition from individual standards on uniform standards, settlement volume of

expenses for 2013 taking into account release of students and new reception will decrease by 4 198 million rubles, i.e. for 3,4% (Table 2).

CONCLUSIONS

Results of the carried-out modeling promote effective implementation of transfer of higher education institutions of Russia on standard and per capita financing and allow to reduce probability of emergence of system risks.

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