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MODERN APPROACHES TO THE "REGIONALIZATION" OF FEDERAL POLICY IN RUSSIAN HIGHER EDUCATION

BASIC RESEARCH PROGRAM

WORKING PAPERS

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Significant differentiation and heterogeneity of Russian regional higher education systems requires thoughtful federal policy taking into account peculiarities and unique features of the regional socio-economic situations. The research presented in the paper had its key goal in the elaboration of the rationale and basis for the "regionalization" of public policy in Russian higher education. Different approaches to the development of regional higher education systems in Russia are explored in the paper. The analysis is based on the presupposition that the governance of higher education system should take into account regional socio-economic development priorities. The typology of regional higher education systems in Russia is presented in the paper. The consideration of the types in the context of the regional socio-economic situations allowed authors to offer public policy mechanisms for the development of regional higher education systems in the context of compliance with the objectives of regional development.

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Introduction

Regions were one of the most important objects of Soviet policy in higher education. Financial and human resource planning was implemented in the context of the regional development. The main reason for that lay in the fact that higher education system has been performing a staffing function for the basic socio-economic infrastructure distributed across the regions at the time of the USSR. A large proportion of higher education institutions were created according to the territorial-production basis (Froumin, et al., 2014).

After the collapse of the Soviet Union higher education system has received significant freedom (Johnson, 2008). At the same time, the focus of public policy attention shifted from federal and regional systems level to the individual institutions. The government had to regulate the operation of the individual institutions in the emerging market where new clients (families and business) started to play key role. It led to the dramatic regional differentiation in higher education. This is most vividly illustrated by the fact that while some regions characterized by a single local branch of an education institution, others have more than 200 universities.

Current public higher education policy continues to have the institutional focus also. Monitoring of higher education institutions' efficiency organized by Ministry of Education and Science, support programs for leading universities and colleges, initiatives to establish national research universities – all of this shows the government's focus on individual universities or particular groups of higher education institutions . At the same time, growing body of national and international research as well as the practice stand out that institutional development is hardly possible in isolation from the system level development. Moreover recent international research stress the increasing role of universities in the regional socio-economic development (Bluestone, 1993; Brown, et al.,1992; Etzkowitz H., 2008; OECD, 2011, 2012). It means that to achieve the objectives on the institutional level the higher education policy in any country should take into account the territorial distribution of the universities, their role within the regional higher education subsystems. It is especially true for the Russian case that is characterized by large scale of the system (about 578 public universities), its qualitative heterogeneity, and enormous territorial distribution, where the majority of students stay in "their" regions to get the higher education degree (Andruschak, Novikov, Pavlyutkin, 2010). Therefore the "regionalization" of public policy in Russian higher education is needed. By the "regionalization" we mean public policy that considers different development scenarios of different regional higher education systems that reflect

regional priorities in social and economic development and peculiar features of the regional systems of higher education.

The goal of this study is to suggest the main vectors of the federal higher education policy that takes into the account the regional heterogeneity of the higher education system, different types and development possibilities of the regional higher education systems that require different policy instruments.

To achieve this goal our research solves three tasks:

- to develop a typology of regional higher education systems (described in the first part of the paper)
- to consider these types of the regional higher education systems within the context of the regional socio-economic situations (in second part of the paper).
- to suggest possible scenarios of the development of different types of the regional higher education system and the national public policy mechanisms to be used while developing heterogeneous federal higher education system in the context of the regional social and economic development (concluding part of the paper)

The research goal and specific tasks define the character of the research as the development of specific policy recommendations.

Principles of the classification of the regional education systems

The first principle can be drawn from the international literature (Teichler, 2004; Neave, 1989, Kyvik, 2004). It says that it is necessary for the classification of regional education systems to take into account main features of *internal structure of the system*. The basic instrument for identifying such characteristics is the elaboration of typology of higher education institutions.

The topic of institutional diversity in the Russian higher education is represented by the body of research including papers of E.Knyazev and N.Drantusova, N. Titova, Y.Kouzminov and I.Froumin, etc. For the purpose of the paper the typology of Russian higher education institutions have been derived from the concept offered by I. Froumin, Y. I. Kouzminov, and D. Semyonov (Froumin, et al., 2014). The reason for that lies in the fact that this classification is based on HEIs main functional activities in the markets where they work. It allows distinguishing different internal segments of higher education in the regions.

Thus, the researchers identify four main types of higher education institutions: *research universities, infrastructural higher education institutions (HEIs), specialized HEIs, mass HEIs (comprehensive HEIs).*

Following the classification developed by I. Froumin, Y. Kouzminov, and D. Semyonov, we use criteria below to determine which category particular institution belongs to:

The USE (Unified State Exam) average – HEIs with the USE average lower that 55[4] form *mass, or comprehensive* higher education segment;

Institution specialization – each of the remaining HEIs has been given its own specialization score, based on the Herfindahl–Hirschman Index (HHI):

$$HHI = \sum_{i=1}^{n} N_i^2 \,,$$

where N is the share of students (the normalized number of students[5]) pursuing a certain specialization i (from 1 to n) among the total number of students at the university. The next step was to determine the median value; HEIs with a score lower than the median have been grouped into the *infrastructural HEI* category. These institutions are marked by a high diversity of study areas and programs, supplying regional job market with professionals in a vast range of areas. Institutions with the HHI index higher than the median focus on a small number of subjects and are thus considered to perform as *specialized HEIs*. Their main characteristic is a specialized education profile; these institutions tend to satisfy the needs of certain industries (e.g. railway engineering universities) or the public sector (e.g. medical or teacher training universities).

Another separate HEI group comprises *research universities* with a special national status and universities that take part in the international competitiveness program implemented by the Ministry of Education and Science. These institutions are characterized by the highest research intensity figures, including R&D volume (money) per faculty member and the number of research grants (Froumin et al., 2014)

Stemming from the facts above, the principles for classifying regional education systems shall be based on determining various types of higher education institutions and their regional market positions. Each public university or college has been classified as a certain HEI type,

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[4] This threshold has been selected in compliance with the methods used in a project entitled Social Monitoring of the University Admission Procedures as a Way of Ensuring Equal Access to Higher Education, a joint effort undertaken by RIA Novosti and the Higher School of Economics (NRU HSE) in 2012

[5] Normalized number of students ("privedennii kontingent") is measured as overall number of full-time students, 25% of evening courses' students and 10% of part-time students.

following the principles suggested above. Another research stage was to calculate the share of students (the normalized number of students) attending institutions of every type among the total number of university students in the region. This figure allows evaluating the distribution of students and the share of various higher education segments (*research HEIs, specialized HEIs, infrastructural HEIs, and mass HEIs*) in the region. Actually we call this principle the segmentation of regional higher education system.

Another principle which shall also be taken into account while classifying systems of higher education is the degree of competitiveness in the regional higher education market. The notion that market forces are more influential than direct control in education development has been gaining more and more popularity lately (Teixeira, Rocha, Biscaia, Cardoso, 2014). Significant number of experts is evaluating higher education sector in terms of 'corporate – market' relations (Middlehurst, Teixeira, 2012). The development of such quasi-market mechanisms in higher education is the result of New Public Management ideologies (Pollitt and Bouckaert, 2009). This phenomenon is worth taking into account, as education markets with a higher level of competition are distinguished by greater efficiency of universities, including public ones (Pollitt, C. and Bouckaert, G., 2011).

The level of competitiveness shall also be determined with the use of the Herfindahl–Hirschman Index, based on the share of students at universities and regional university branches. In this case, the formula for finding the Herfindahl–Hirschman Index runs as follows:

$$HHI = \sum_{i=1}^{n} N_i^2,$$

where N is the share of students attending university *i*, (from 1 to n) among the total number of students attending the region's higher education institutions.

Data analysis (see appendix 1) shows that most regions are characterized by low competitiveness in higher education, which is, in fact, a defining feature of Russian education. Only 20% of regional higher education systems have a low concentration level, which reflects a substantial number of players in the education market. 22% of regions possess higher education systems with a moderate concentration level. However, the overwhelming majority – 58% of regional higher education systems are highly monopolized by one or a few major public institutions.

In the following section we use these principles to suggest the typology of the regional higher education systems.

Typology of regional higher education systems in Russia

According to the principles outlined above, the regional higher education systems could be grouped by type with the use of the cluster analysis method. In this case, this method appears to be the most suitable for dividing objects into relatively uniform classes, based on pair comparison with the use of predefined and measured criteria (Nasledov, 2008).

This paper relies on the empiric data, including the 2012/2013 figures of higher education systems in various Russian regions and the results of higher education institutions' monitoring conducted by the Russian Federation Ministry of Education and Science.

In order to verify the data, we have predefined a separate type of regional education system by objective parameters, which stand apart because it includes research universities with a national status, as well as universities that take part in the international competitiveness program (Decree 599, 2012). These regional higher education systems include no less than one major HEI (table 1), serving as the defining feature of the macro-regional or global status of the education system (Froumin, et al., 2014).

Tab.1. Regions with globally oriented HEIs

Belgorod region	Primorsky Krai
Moscow	The Republic of Mordovia
Saint Petersburg	The Republic of Tatarstan
Irkutsk region	Samara region
Moscow region	Saratov region
Nizhny Novgorod region	Sverdlovsk region
Novosibirsk region	Tomsk region
Perm Krai	Chelyabinsk region

Having excluded the regions with leading educational institutions, we proceeded to carry out the classification of the rest regional higher education systems. Cluster analysis has led to the identifying of four region groups. The average parameter values per cluster are shown in Table 2.
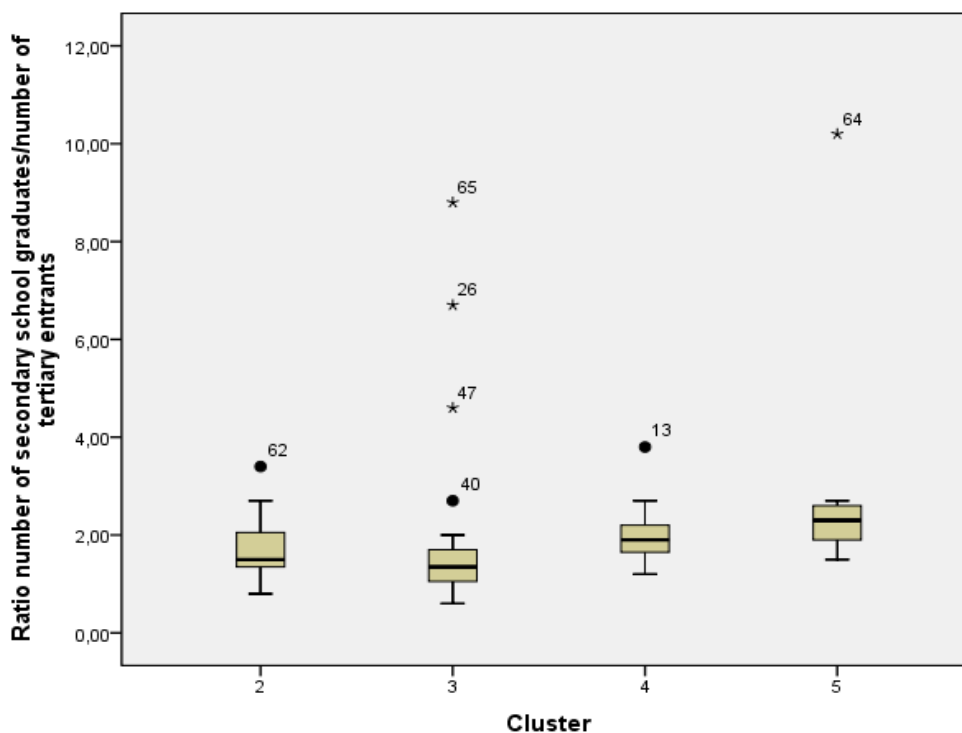
Tab.2. Average parameter values in defined clusters (excluding regions with global HEIs)

Cluster number	Share of students attending infrastructural HEIs	Share of students attending specialized HEIs	Share of students attending mass HEIs	Herfindahl–Hirschman Index
2	.5734	.2005	.2262	.2644
3	.2337	.5614	.2049	.1994
4	.8560	.0866	.0574	.5203
5	.1334	.0347	.8319	.3713
Total	.4025	.3364	.2612	.2885

International practices show that HEIs are quite capable of actively influencing their region's social and economic development (Mauer, Dmitriev, 2009; Caffry, Isaacs, 1971; Bluestone, 1993; Gaffikin, Morrissey, 2008). It often happens that the extent of this influence is reflected by the level of regional higher education systems' attractiveness for students, teachers, business community (in terms of research), etc. This is why it is very important to evaluate the attractiveness of the determined regional higher education system types while interpreting the results of the clustering. Since statistical monitoring of educational institutions is fairly limited, Russian regional higher education systems almost entirely lack the data that could reflect their attractiveness. Most research papers in this area (Chudinovskikh, Denisenko, 2003; CSP, 2004) date back to the early 2000s, which makes them outdated in the current context. As a result, the evaluation of the regional higher education systems' attractiveness shall be based on the regional ratio of the number of high school graduates that passed the USE to the number of those that entered higher education institutions. These figures may be viewed as relevant due to the mass proliferation of higher education in Russia - the ratio of students studying in higher education institutions to 17-to-22-year-olds is 84% (Nikolaev, Chugunov, 2012), which is reflected in secondary school graduates' intention to enter higher education institutions. Data analysis shows that no more than 13% of Russian Federation regions attract students from other regions, having a surplus of the number of university freshmen over the number of high school graduates.

After comparing the levels of attractiveness with the list of regional education system clusters, it was found that the level of variation within every type is minimal (with a few exceptions, such as Chukotka Autonomous Area, Yamalo-Nenets Autonomous Area, etc.) – see figure 1. It means that level of attractiveness may be used while interpreting the clusters we have compiled, with a high degree of accuracy.

Fig.1. Extent of attractiveness variation within the regional higher education system clusters

Types determined:

Based on the precious analyses, five types of regional higher education systems have been determined:

1. Regions with attractive globally oriented HEIs;

This regions are characterized by a number of globally oriented or leading specialized universities, which attract students from other regions; and higher education markets display a great level of competitiveness (the average Herfindahl–Hirschman Index reaches 0.13). This group includes Moscow, Saint-Petersburg, Tomsk Oblast, Tatarstan, and other regions.

2. Regions with a balanced regional higher education system of the infrastructural type;

This cluster characterized by the infrastructural HEI segment that is most prevalent and balanced distribution of another higher education segments (average HEI distribution: specialized HEIs – 0.21; infrastructural HEIs – 0.56; comprehensive HEIs – 0.23). Other specific features include an average level of competition in the regional higher education market and a sustainable number of students (no students go to/come from other regions to study).

3. Regions with a balanced regional higher education system of the specialized type;

Such regions are characterized by the prevalence of narrowly specialized programs and a balanced distribution of another higher education segments (average HEI distribution: specialized HEIs – 0.53; infrastructural HEIs – 0.23; comprehensive HEIs – 0.2). Other specific features include a high level of competition in the regional higher education market and a moderately sustainable number of students (no students go to/come from other regions to study).

4. Regions with dominant infrastructural HEIs;

This type is characterized by the dominance of the infrastructural higher education sector; it should also be noted that the market is highly monopolized and the brightest students are steadily leaving to study in other regions.

5. Regional higher education system with the lowest level of development (underdeveloped);

This type is marked by a striking prevalence of comprehensive HEIs and infrastructural HEIs, many of which belong to the poor-quality education segment, according to the HEI monitoring data. Regions belonging to this cluster experience an extreme level of higher education market monopolization, and the number of students leaving to study elsewhere is the largest.

The classification of socio-economic conditions in Russian regions

As it was mentioned above, the national higher education policy should also take into an account the regional socio-economics development. There are many different typologies and classifications of regional economic development conditions: typology of Independent Institute for Social Policy (N. V. Zubarevich), 2010; typology of Ministry of Regional Development, 2007; typology of RA Expert rating agency, 2007; typology of Grigoriev-Urozhaeva, 2010, etc.

Most of these typologies are hierarchical and describe the regions in terms of the level of economic development. For the purpose of the research we applied to the typology elaborated by the RA Expert rating agency (RA Expert, 2007) because it takes into account the rate of investment potential, considering the main internal characteristics of the economic development. RA Expert rating divides regions into the following types:

- Driver regions;
- Support regions;
- Growth poles;
- Growth points;

- "Special attention" regions;
- Regions with an "undefined perspective";
- Problematic regions.

According to this classification, "driver regions", "support regions", and "growth poles" have significant investment potential and sizable domestic development resources and may be largely independent from the federal center.

"Growth points", in their turn, are characterized by small population, modest economic potential and, at the same time, low investment risks.

"Problem regions" possess resources that are not being used to their full extent because of the stagnant investment climate.

"Regions with an undefined perspective" have low investment potential, but may possibly join one of the other groups.

Finally, the "special attention" group comprises regions with the highest investment risk and modest potential, which at present do not have any tangible economic or political reasons to shift to another category.

Analysis of the typology of the regional higher education systems in the context of the classification of regional economic conditions

The next stage of the research involves comparing the classification of regional higher education systems, which were compiled above, with the current features of the regions' social and economic development. It allows to identify how the development of regional systems of higher education should correspond with the socio-economic development of regions. The imbalances in this comparison should be considering as signals for the policy interventions.

We have compared the classification of regional higher education systems with the regional economic conditions (see Table 3). This analysis revealed a high degree of dependence. Higher education systems with the lowest level of development appear in "problem" regions and "special attention" regions only (see Figure 2). Whereas systems with global higher education institutions are an essential feature of regions with the highest investment attractiveness (driver regions, support regions, growth poles, growth points). For another types of higher education systems their correspondence with economic conditions is more apportioned. In fact, it also means a high heterogeneity of regional higher education systems in terms of their relationship with socio-economic development of the region.

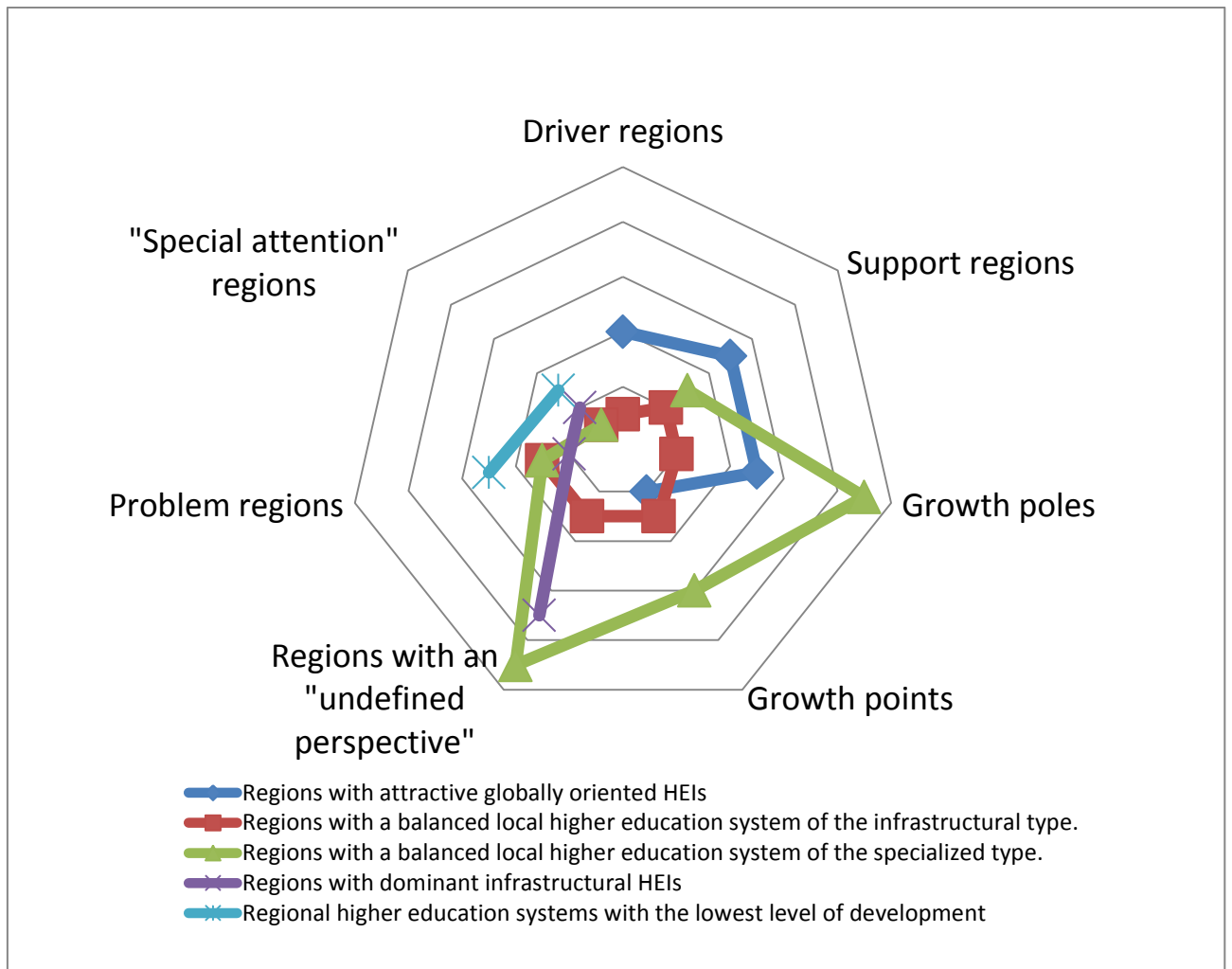**Tab.3. Comparison of the classification of regional higher education systems with regional economic conditions**

		Types of regional economic conditions (RA Expert)						
		Driver regions	Support regions	Growth poles	Growth points	Regions with an "undefined perspective"	Problem regions	"Special attention" regions
Types of regional higher education systems	**1) Regions with attractive globally oriented HEIs**	Sverdlovsk Region	Perm Territory	Primorye Territory	Republic of Mordovia			
		Moscow	Republic of Tatarstan	Belgorod Region	Tomsk Region			
		Saint-Petersburg	Chelyabinsk Region	Novosibirsk Region				
		Moscow Region	Nizhny Novgorod Region	Irkutsk Region				
			Samara Region	Saratov Region				
	2) Regions with a balanced local higher education system of the infrastructural type	Khanti-Mansi Autonomous Area	Kemerovo Region	Tula Region	Kaliningrad Region	Kirov Region	Republic of North Ossetia-Alania	Chechen Republic
			Krasnoyarsk Territory	Republic Sakha (Yakutia)	Vologda Region	Murmansk Region	Kurgan Region	
					Orel Region	Republic of Adgea	Republic of Mari El	
	3) Regions with a balanced local higher education system of the specialized type		Krasnodar Territory	Altai Territory	Chuvash Republic	Smolensk Region	Republic of Dagestan	Republic of Tuva
			Republic of Bashkortostan	Voronezh Region	Yaroslavl Region	Tver Region	Trans-Baikal Territory	
			Rostov Region	Yamal-Nenets Autonomous Area	Kaluga Region	Udmurtian Republic	Bryansk Region	

			Volgograd Region	Lipetsk Region	Ivanovo Region		
			Khabarovsk Territory	Novgorod Region	Astrakhan Region		
			Leningrad Region	Tyumen Region	Kursk Region		
			Omsk Region		Ulyanovsk Region		
			Orenburg Region		Pskov Region		
			Stavropol Territory		Republic of Buryatia		
					Ryazan Region		
4) Regions with dominant infrastructural HEIs					Vladimir Region	Republic of Kalmykia	Kabardino-Balkarian Republic
					Penza Region	Republic of Altai	Republic of Ingushetia
					Tambov Region		
					Arkhangelsk Region		
					Kostroma Region		
					Republic of Karelia		
					Republic of Khakasia		
5) Regional higher education systems with the lowest level						Amur Region	Kamchatka Territory
						Jewish	Karachayevo-

of development						Autonomous Region	Circassian Republic
						Republic of Komi	Magadan Region
						Sakhalin Region	
						Chukotka Autonomous Area	

Fig.2. Correlation between the classification of regional higher education systems and regional economic conditions

The analytical table given above may serve as a basis for setting the governance goals in terms of developing heterogeneous regional higher education systems so that they could correspond to each region's economic needs. The identification of this connection provides the basis for defining several directions of the development for various regional higher education system types, based on the goal to ensure their compliance to the region's economic conditions. We discuss these directions in the next section.

Possible approaches and scenarios to the development of regional higher education systems in the context of socio-economic regional development in Russia

We proceed from the assumption that the development of advanced types of regional higher education systems with corresponding to socio-economic conditions implies significant interference

of the state. It is stipulated by the fact that higher education institutions develop very slowly under natural conditions. Besides, it is proved that higher education system is often characterized by institutional isomorphism (DiMaggio, Powell, 1983). Many higher education institutions try to copy the model of a research university. It consequently causes unconstructive competition within the system. At the same time, the advanced typology of the regional higher education systems provides a possibility for clear mission differentiation of the higher education institutions.

International experience of managing regional systems (OECD, 2011, 2012) proves that there are certain needs, fulfillment of which is possible only with the interference of the state:

1. Permanent need to bring the structure of university education in line with the structure of demand of the labor market.
2. Need to consolidate higher education institutions into a single integral system.
3. Differentiation of functions of higher education system segments and separation of their management system.

The following actions could be implemented to satisfy these needs:

1. Change in the structure of the higher education system management. It includes a wide range of management decisions – from direct state control over the higher education system (that was characteristic of socialistic countries) to creation of conditions for competition and/or self-regulation of the higher education market (the most illustrative example – Canada and USA where the competitive federalism model is fully embodied in the higher education sphere (Brenton, 1996; Kasper, 1996)): the regions compete both among themselves horizontally (for attraction of the best students) and vertically for additional support from the national authorities.
2. Stimulation of university activities aimed at social and economic development of the region.
3. Strengthening of the public accountability and transparency of the universities.

To a varying degree, the aforementioned needs are common for each regional higher education system in Russia. However, despite the commonalities in Russian regional higher education systems there is great specificity in their current development capabilities. Particular public management tools vary depending on regions' potential.

Analysis of the regional educational situations in Russia shows that today higher education systems are very much differentiated from the point of view of the internal structure, the universities' potential and their possible contribution to development of specific regions. On that basis transformation of the university systems requires important strategic choices. Depending on the current state of the higher education system, the regional or federal authorities may set different

priorities: creation of leading universities, shaping of strong specialized (sectoral) or infrastructural higher education institutions. At the same time, one should not overlook the fact that the higher education system is a structure that can simultaneously perform various functions: from global positioning to the local labor market supplying.

Based on the current state of the regional higher education systems, key strategic choices in their transformation, as well as proposed advanced typology, the following scenarios of the development of the regional higher education systems of different types could be suggested:

1. **Regions with attractive globally oriented HEIs**

In case there is a university seeking to implement the model of a global research university (HEI participating in the program of international competitiveness improvement or leading sectoral university) in the territory of the region, it seems necessary to achieve the balance and quality of the remaining system.

Russian and foreign practice shows that currently the essential way to improve the quality and efficiency of weak universities from the perspective of public management is their consolidation with stronger universities (Goedegebuure, 2012; Froumin, Povalko, 2014). At the same time, the issue of actual effectiveness of this idea is pending. There are researches demonstrating that the quality of education or scientific productivity in the universities reorganized by means of consolidation, decreases (Ursin et al, 2010). Governments need to explore new forms of steering that could be more effective within the new context of mass higher education (Amaral et al., 2002). On that basis in the process of shaping a well-balanced regional higher education system using the tool of consolidating weak institutions with the leading universities should not be the only and scaled solution. It does not guarantee improvement of the weak universities quality but overloads the leading universities, limiting their development.

The key task of the development of regions with globally oriented HEIs is to establish intersystem differentiation. Whereas the whole range of universities is presented in the regions – from the global research universities to mass higher education institutions, it is necessary to shape a new higher education landscape. Different tasks should be assigned to different university segments; the tasks should be oriented at the demands of specific segments of the global, national or regional labor markets (Leshukov, Lisyutkin, 2013). In this case the change in the model of the higher education system management becomes logical. The new model shall include competition mechanisms within the university groups providing conditions for self-development of the system.

2. **Regions with the balanced local higher education systems (2.1.) of the infrastructural type, (2.2.) of the specialized type.**

Regions that already have a relatively balanced higher education system but at the same time are characterized by outflow of the best students on the one hand can provide incentives to maintain the inflow of high quality student population. On the other hand in case there are no universities – potential attractors in the region, the higher education system can be refocused on the regional labor market. Specialized universities should be reoriented to correspond with the structure of regional economy.

In order to improve the quality of performance of the weak regional higher education institutions (infrastructural and specialized) it is necessary to provide conditions for their focusing on the appropriate educational segments.

3. **Regions with dominant infrastructural HEIs**

Such regional higher education systems are characterized by the fact that the best school graduates leave the region entering stronger or more prestigious universities. At the same time, there are universities in the territory of the region able to provide the proper quality of training by specialties relevant for the regional labor market.

For efficient functioning and development of such higher education systems the regions should develop the relations system based on the "triple helix" model (Etzkowitz, 2008), which assumes close cooperation of university – business – state.

4. **Regions with underdeveloped higher education systems**

Mass higher education prevails in the regions with underdeveloped higher education systems, often with segments of inadequate quality. There is practically no competition for prospective students and financial resources among the higher education institutions. Many school graduates including even "B" students go to study in the universities located in other regions.

The most probable version of development of such a regional system is its gradual transformation into the well-balanced system of infrastructural universities and mass higher education institutions. It is possible by means of supporting existing universities to fulfill the tasks of the infrastructural and mass higher education. In such a case the universities will be reoriented to the needs of the regional labor market with further improvement of the quality of implemented educational programs.

Mechanisms of public management for transformation of the regional higher education systems

In this section we discuss how to implement these scenarios and what public administration tools and mechanisms are appropriate to manage the transformation of regional higher education

systems. Selection of one or another strategic transformation path of the regional higher education system subsequently supposes significant state interference with the various management tools. It is important to understand that public management mechanisms will influence the highly heterogeneous regional higher education systems. Usage of the governance mechanisms' mix for higher education systems development is an important characteristic of foreign experience. For example, in OECD countries new approaches to the governance of higher education based on the authority of the state and providing the power of markets appear (OECD, 2003).

Transformation of higher education systems in regions with globally oriented HEIs, with the balanced local higher education systems of the infrastructural type, or of the specialized type, regions with dominant infrastructural HEIs requires indirect new public management tools. In such regions universities could perform as the drivers of regional development. The transformation of the regions with underdeveloped higher education system implies the use direct management tools to support enhancement of the quality of education.

Taking into consideration the New Public Management basis (Hood1991; Ferlie et al 1996; I. Bleiklie 1998; Stech 2011), promoting market oriented mechanism in education as a public sphere can lead to segmentation of higher education sector and improving the quality of education. Establishing competition between universities should be considered as one the main goals of the government policy in higher education sector (Teixeira. et al, 2014; Lisyutkin, Froumin, 2014). Moreover, such a model assumes that government must take a position of "steering from the distance" (Marginson, 2011, Braun, 1999). Among the state management tools that can be used for artificial transition of the regional higher education systems from the current state to the desired one, characterized by competition model and "steering from the distance", it is worth paying attention to the following mechanisms:

1. Creation of a permanent collective body responsible for analysis of the situation characterizing the network of universities, and coordinating measures of bringing it in accordance with the priorities of the regional policy;
2. Creation of an updatable data base of the higher education institutions in the region, as well as on the demand structure on the regional labor market and its development perspectives;
3. Resource stimulation of the network development in required areas (allocation of land lots, co-financing or financing of projects and programs, allocation of municipal property (including buildings));
4. Development of mechanisms and incentives including financial ones for transition of universities from one focus to another;

5. Engagement of the universities and federal authorities in the elaboration of the region development strategy that includes the university network development strategy;

6. Engagement of the universities in communication with the industry and organizations of culture and science to strengthen their interaction;

7. Engagement of the universities in communication with each other for creation of general projects for the benefit of development of the network and the region;

8. Engagement of the universities in communication with the institutions of secondary vocational education to create a complex multilevel policy in the higher education sphere;

9. Lobbying inclusion of administrative, resource and regulatory levers at the national level for development of the network in the required areas;

It is worth noting that the development of regional higher education systems with the lowest level of development cannot be characterized only by the above mentioned list of tools. For particular higher education systems it is possible to use policy of direct management and regulation. One of the most meaningful policy instruments which can be used in respect to such systems is closure (or reorganization) of subordinate universities with the transfer of municipal students order for personnel training to the federal and non-state universities.

Merger or reorganization of universities as a tool for increasing effectiveness of their work and optimization of available financial and human resources can be used only when there is a weak university not satisfying the labor market needs in the region. If such a university degrades (Lisyutkin, Froumin, 2014) and is not able to provide conditions for its own survival, not talking about development, it is recommended to gradually close it with further transfer of property to other universities of the region. In no other cases the merger or reorganization tool can be used without a special analysis – otherwise it can lead to serious losses in human and reputational capital. However, a merger cannot be a universal optimization tool for them due to the fact that the regions are too dissimilar, first of all by geographic and cultural characteristics (for instance, Republic of Sakha and Jewish Autonomous Region, which are in the same cluster of regional educational situations).

Use of the reviewed legislative, financial and regulatory tools of the public management with regard to the universities related to different regional higher education systems taken as a whole will allow efficiently solving problems and minimizing gaps characterizing the current state of the regional education systems.

Nevertheless, since transition of the regional higher education systems from the current state to the desired one supposes significant artificial influence it is necessary to adequately evaluate

associated risks and problems. The risks associated with artificial optimization of the regional higher education systems might include:

- high resistance from the university management and academic elite;
- in the regions with stagnating economy reforming of the higher education as an area of the budget sector can lead to escalation of social strain and further economic decline;
- possible lack of specialists (i.e. employees that are against reforming) that will lead to impairment of the educational, scientific and research activities;
- reputational risks;
- decline in the human capital index (if the optimization result will be a decrease in the population coverage by higher education);
- breakdown of social and economic connections of the universities;
- deformation of the graduates supply structure.

Thus a conclusion can be made that when shifting some regional systems from the current state to the advanced one the tools and mechanisms of public management should be used, which allow not only reaching the goal but also minimizing associated risks.

Conclusion

The analysis suggested above shows that regional higher education systems in Russia are highly heterogeneous. At the same time the part of the regional higher education systems are characterized by discrepancy between their functional activities and socio-economics development of regional. First of all, it is related to absence of external formal control over activities of the universities by the regions (Kouzminov, 2009), as well as the absence of a focus in the educational and research work in the majority of higher education institutions (Froumin, Kouzminov, Semyonov, 2014). If the regional systems continue developing at natural pace under the influence of such external factors as demography and population's demand the potential of the single network of universities might remain unrealized (Leshukov, Lisyutkin, 2013).

The analysis considered that identification the different types of regional higher education systems within the context of the regional conditions must be a basis for elaboration approaches to their development. To make universities a full-fledged resource of development for the regions an advanced typology of the regional higher education systems was shaped in the work.

There is always an important strategic choice in this case. On the one hand higher education system meets different federal-level challenges such as international competitiveness, for instance,

which requires uniform policy. On the other hand, regions demand contribution to the development of higher education systems from the "Federation" which evidently assigns the task of differentiated policy-making: from indirect new public management tools to direct state interventions.

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Annex 1. The degree of regional higher education systems concentration

Low concentration		Moderate concentration		High concentration	
Region	**HHI**	**Region**	**HHI**	**Region**	**HHI**
Moscow	1,70%	Leningrad Region	11,00%	Vologda Region	18,10%
Moscow Region	3,60%	Voronezh Region	11,00%	Tomsk Region	18,88%
Saint-Petersburg	3,61%	Irkutsk Region	11,20%	Chuvash Republic	19,20%
Samara Region	6,33%	Smolensk Region	11,50%	Ulyanovsk Region	19,50%
Rostov Region	7,30%	Saratov Region	11,80%	Krasnoyarsk Territory	19,50%
Novosibirsk Region	7,90%	Altai Territory	11,90%	Kursk Region	19,50%
Republic of Bashkortostan	8,00%	Sverdlovsk Region	11,96%	Kirov Region	19,90%
Krasnodar Territory	8,30%	Chelyabinsk Region	12,11%	Ryazan Region	20,30%
Volgograd Region	8,50%	Khanti-Mansi Autonomous Area	13,10%	Republic of Komi	20,90%
Kemerovo Region	8,50%	Ivanovo Region	13,20%	Republic of North Ossetia-Alania	21,10%
Republic of Tatarstan	9,09%	Kaluga Region	13,20%	Udmurtian Republic	21,40%
Republic of Dagestan	9,20%	Perm Territory	13,23%	Primorye Territory	21,70%
Yamal-Nenets Autonomous Area	9,30%	Yaroslavl Region	13,70%	Orel Region	22,20%
Nizhny Novgorod Region	9,42%	Khabarovsk Territory	15,20%	Murmansk Region	22,20%
Stavropol Territory	9,80%	Tyumen Region	16,40%	Astrakhan Region	22,80%
Omsk Region	9,90%	Orenburg Region	17,10%	Amur Region	23,40%
		Lipetsk Region	17,70%	Belgorod Region	23,65%
		Bryansk Region	17,70%	Tver Region	24,00%
				Kamchatka Territory	24,10%
				Republic of Buryatia	26,90%
				Kaliningrad Region	27,20%
				Karachayevo-Circassian Republic	27,50%
				Kurgan Region	27,80%
				Tambov Region	31,00%
				Pskov Region	32,00%
				Penza Region	32,30%
				Kostroma Region	32,30%
				Tula Region	33,10%
				Trans-Baikal Territory	37,30%
				Republic of Adygeya	37,80%
				Kabardino-Balkarian Republic	39,80%
				Arkhangelsk Region	40,30%
				Republic of Sakha (Yakutia)	40,90%
				Chechen Republic	41,30%
				Sakhalin Region	43,50%
				Vladimir Region	43,60%
				Republic of Mari El	43,90%
				Republic of Karelia	45,40%
				Republic of Mordovia	46,10%

				Republic of Khakassia	50,60%
				Jewish Autonomous Region	51,40%
				Magadan Region	54,80%
				Novgorod Region	59,40%
				Republic of Kalmykia	64,20%
				Republic of Ingushetia	94,50%
				Republic of Tuva	96,00%
				Republic of Altai	98,30%

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